ELECTRICAL PROJECTS LIST – SIMULATION AND HARDWARE
<u>KIT BASED PROJECTS</u>

1. Project-based on Electric Machine

1. Stepper Motor Controller
2. Speed Control of DC Motor
3. PC based Speed Controlled DC Motor
4. AC PWM Control for Induction Motor
5. Predefined Speed Control of BLDC Motor
6. Automatic Sensor Gate using Stepper Motor
7. Single Phase Induction Motor Speed Control
8. Thyristor Power Control of Induction Motor
9. AC to DC with Four Quadrant Motor Operation
10. Electronic Voting Machine with Seven Segment
11. Smooth Start of a Single Phase Induction Motor
12. Electronic Soft Start for 3 Phase Induction Motor
13. Induction Motor Speed Control using TV Remote
14. Speed Control of DC motor by Smart Voice Recognition
15. Speed Synchronization of Multiple Motors in Industries
16. Four Quadrant DC Motor Speed Control with Microcontroller
17. Cellular Phone through Industrial DC Motor Speed Controlling System
18. Wireless DC Motor Speed and Direction Control for Robotic Applications
19. Induction Motor Protection System (Over Load Voltage or Current Strip)
20. DC Motor Speed Control using Radio Frequency Suitable for Robotic Arm
21. Speed Synchronization of Multiple Motors in Industries using RF remote
22. Bidirectional Rotation of Single Phase Induction Motor without Run Capacitor
23. Brushless DC Motor (BLDC) or PMDC Speed Control by PWM with RPM Display
24. Remote Induction Motor Control by Android Application with 7 Segment Display
25. Four Quadrant Operation of DC Motor Remotely Controlled by Android Application
26. Bidirectional Rotation of a DC or Stepper or Servo Motor with a Remote Control Device
27. Automatic <u>Star-Delta</u> Starter Using Relays and Adjustable Electronic Timer for Induction Motor

In most of these projects, the electrical motor is used as a piece of important equipment.

2. Project-based on Solar System

29. Solar based Invertor
30. Solar Tracking System
31. Peltier Cooler using a solar panel
32. Solar based Elevator System
33. Solar based Auto Irrigation System
34. Train with Solar Panel
35. Solar based Power Charge Controller
36. Solar based Dam control using 8051 microcontroller
37. Optimal Power Generation using Solar System
38. Solar based Water Irrigation using RF Remote Control

ELECTRICAL PROJECTS LIST – SIMULATION AND HARDWARE

39. Solar based Variable DC Power Switching using RF Remote
40. Charge and Load Protection in Solar Power Management
41. Solar Irrigation System with Soil and Temperature Sensor
42. Solar Powered LED Street Light with Auto Intensity Control
43. Farmer Friendly Solar Based Electric Fence for Deterring Cattles
44. Solar Tracking System with Cooling Panel with Solar Charger
45. Solar Highway Lighting System with Auto Turn Off in Daytime
46. RF Controlled Electric wheel Chair with IR Obstacle using Solar Energy
47. Solar based Electric Wheel Chair with IR Obstacle with RF Remote
48. Auto Power Supply Control from Three Different Sources (Solar, Mains, Battery)
49. Solar Water Pump Control with Four Different Time Slots for Power Saving Applications
50. IR or RF Remote Control (Bulb, Tubelights, Fan, TV) using Solar System
51. Solar Energy Measurement System Conveyed over RF using a PIC Microcontroller

3. Project-based on Electronic System

52. Hover Board
53. Electronics Power Saver
54. Cyclo Converter using Thyristors
55. Four-Channel Data Logger using EEPROM
56. Electronics Code Look using Matrix Keypad
57. Marx Generator based High Voltage using MOSFETs
58. Home Appliances Controlling using Android Mobile via Bluetooth
59. Embedded Quiz Monitoring System for Team Performance Evaluation
60. Temperature Adjustable Heating System with Power Electronic Devices
61. High Voltage DC up to 2KV From AC by Using Diode and Capacitors in Voltage Multiplier Circuit

The microcontroller-based project topics are shared later part of this article. Keep reading.

4. Project-based on Electrical Power System

61. Password-Based Circuit Beaker
62. Commercial Power Saver System
63. Channel Relay Operated using PC
64. Three Phase Change Over System
65. Foot Step Power Generation System
66. Super-fast Electronic Circuit Breaker
67. Flexible AC Transmission using TSR
68. Flexible AC Transmission Using SVC
69. AC Power Transfer Wirelessly by HF
70. Underground Cable Fault Distance Locator
71. Power Grid Monitor and Control through PC
72. Transformer Monitoring and Control System
73. Phase Sequence Checker for Three Phase Supply
74. Electronic Soft Start for Single Phase Pump Motor
75. Electronic Soft Start for 3 Phase Induction Motor

76. Instant Electrical Load Survey for Industries or Home
77. Single Phase Preventer with Overload Control Switch
78. Load Cut off Switch Upon Over Voltage or Under Voltage
79. Load Shedding Time Management for Utility Department
80. Mains Supply Sensed Over Voltage or Under Voltage Trip Switch
81. Password-based Electronic Line Trip in GEB with all Indication
82. Transformer Over Load Alert System With Voice Announcement
83. Footstep Power Generation System (Weighing Machine based)
84. Auto Selection of any Available Phase, in 3 Phase Supply System
85. Zig Bee Wireless Relay Control and Power Monitoring System
86. Remote Monitoring of Transformer or Generator Health Over the Internet
87. Industrial Power Control by Integral Cycle Switching without Generating Harmonics
88. Grid Synchronization Fail Detection on Sensing Frequency or Voltage Beyond Range
89. XBEE based Remote Monitoring of Three Parameters on Transformer or Generator Health
90. APFC (Automatic Power Factor Compensation) for Industrial Power use to Minimize Penalty
91. Three Phase Fault Analysis with Auto Reset on Temporary Fault and Permanent Trip Otherwise
92. High Voltage DC up to 2KV From AC by Using Diode and Capacitors in Voltage Multiplier Circuit

5. Project-based on the Control System and MicroController

In the following list, the projects are built with the help of the control system and microcontroller.

By using the basic Control System:

93. Traffic Light Controller using LCD
94. Traffic Light Controller Using Seven Segment
95. Contactless Liquid Level Controller
96. Access Control System Using Card
97. PC Based Electrical Load Control
98. Lamp Illumination Control with Precision
99. Temperature Controlled DC Fan
100. Servo Motor Control Using Mobile Phone
101. Brain Controlled Robot
102. Mobile Charging On Coin Insertion
103. Brain Controlled Wheel Chair
104. CAR Controlling using Mobile
105. Voice Controlled Home Appliances
106. Hand Motion Controlled Robotic Arm
107. LED Street Light Control with Power Saver
108. Dish Positioning Control by IR Remote
109. AC Power Strength Controller System
110. AC Power Control with Programmable Interface
111. Phone Controlled-Load Management System
112. Intelligent Traffic Light Controller for Ambulance
113. PC Controlled Scrolling Message Display for Notice Board

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ELECTRICAL PROJECTS LIST – SIMULATION AND HARDWARE

114. Exhaust Fan for Bidirectional Motion with Remote Control
115. AC PWM based Power Control by IGBT / MOSFET
116. Any Type of Liquid Level Controller using Ultrasonic Transducer
117. Human Controlled Colour Changing LED (RGB) Lighting
118. Automatic LED Intensity Control with Vehicle Movement
119. Voice Controlled Robot by Cell Phone with Android App
120. I.V.R.S. System for Industrial Process Control
121. Pick and Place Robotic Arm and Movement Control
122. Intelligent Train Security System and Auto Controlling
123. Battery Operated Motorized Wheel Chair for Handicaps
124. Submersible Pump Controlling with Power Failure Protection
125. Android Controlled Military Spying and Bomb Disposal Robot
126. PC Mouse operated Electrical Load Control Using VB Application
127. Reducing Electric Bill for Industries and Commercial Establishments
128. Voice Controlled Robotic Vehicle with Long Distance Speech Recognition
129. Thermoelectric PELTIER Cooler with Temperature Controller Cooler System
130. Submersible Pump Controlling using Cell phone With Power Failure Protection
131. High Power LED-based Intelligent Streetlight Controlling System with Vehicle Counter
132. Submersible Pump Controlling with Temperature Controlling with Power Failure Protection
133. Programmable Switching Control for Industrial Automation in Repetitive Nature of Work (Pick & place)

By using the Microcontroller:

136. Microcontroller based on Data Logger
137. Multiple Microcontrollers in LAN like Setup
138. Microcontroller based on Heart Beat Counter
139. Microcontroller based on Caller ID (AT89C2051)
140. Mains Fail Detection with UPS Analogy using 8051 Microcontroller
141. Microcontroller based on Electronics Baby Swing
142. Microcontroller based on Green House Control
143. Power Theft Detection using 8051 Microcontroller
144. Microcontroller based on Line Following Robotic Vehicle
145. Microcontroller based on Dam Control with LCD Display
146. Ultrafast Acting Electronic Circuit Breaker Using PIC Microcontroller
147. Microcontroller based Voice Operated Load Status with GSM
148. Microcontroller based on Cordless Mouse Features by TV Remote

ELECTRICAL PROJECTS LIST – SIMULATION AND HARDWARE

6. Project-based on the Communication System

By using the Bluetooth System:

149. Bluetooth Operated Home Automation
150. Bluetooth based Calling System in Elevator
151. Advanced Wireless Industrial Automation System based on Bluetooth
152. Bluetooth Controlled the Robot using Android Mobile
153. Bluetooth based Security Enabled Powered Devices Control System

By using the Infrared (IR) Sensor:

155. IR Sensor-based Automatic Toll Tax
156. Energy Saver using PIR motion Sensor
157. IR Remote operated Pick and Place Robot
158. Distance Measurement by Ultrasonic Sensor
159. IR Remote based Controlled Robotic Vehicle
160. IR Remote based Operated Home Automation
161. Multi-Sensor Strategies to Support Blind People (LDR – IR – ultrasonic)
162. IR Remote based Submersible Pump Controlling with UPS System for Power Failure

By using the Radio Frequency (RF) System:

163. RF Remote based Door Control
164. RF-ID based Library Automation
165. RF-based Elevator Calling System
166. RF-ID based Access Control System
167. RF-based Automatic Hover Board Machine
168. Auto Mains Power Failure using the RF system
169. Variable DC Power Switching using RF Remote
170. Direction Control of DC motor using RF Remote
171. RF-ID based Highway Toll Tax Collection System
172. RF Controlled Wildlife Observation Robot Project
173. RF-based Petrochemical Fire Monitoring and Control Station
174. Remote Monitoring of Patient Body Temperature Over Internet
175. Wireless Home Appliance like Fan Speed Control using RF Communication
176. Automatic Electrical Appliances Control Using RF Remote with Power Saver
177. RF-ID based Electronic Passport System for Easy Governance using Arduino
178. Submersible Pump Controlling using RF Remote with UPS System for Power Failure
179. Security Integrated System based on RF-ID Access Protocol for Industrial Applications
180. Industrial and Commercial Appliances Monitoring and RF Controlling with Power Saver

By using SMS System:

181. Electronic Code Lock with Voice Message
182. Sensor Gate Operated with Voice Message
183. SMS Based Stepper Motor Controlling System
184. Pre Recorded Leave Messages with Basic Home Appliances Load for Emergency
185. Railway Level Crossing Gate Control through SMS by the Station Master or the Driver

ELECTRICAL PROJECTS LIST – SIMULATION AND HARDWARE

186. Theft Intimation of the Vehicle Over SMS to Owner Who Can Stop the Engine Remotely

By using the Global System for Mobile communication (GSM) System:

187. Automatic Power Saver with GSM
188. UPS System with Alert by GSM Modem
189. Heart Beat Counter using GSM SIM300
190. Process Control System using GSM
191. Vehicle Protection System with GSM
192. Voice-based Notice Board using GSM
193. Medical Emergency Alert system through GSM
194. Weather Report Information System using GSM
195. Power Meter Reader Plus Load Control using GSM
196. GSM based Monthly Energy Meter Billing via SMS
197. Wireless Electronic Notice Board using GSM
198. SMS based Device Control using GSM Modem
199. Submersible Pump Controlling using GSM Modem
200. Water Level Measurement through GSM SIM300
201. Remote Access to Agriculture Motor through GSM
202. Automatic Load Switching of Transformer using GSM
203. Vehicle Accident Detection with GPS and GSM Modem
204. Power Grid Monitor & Control System using GSM Modem
205. Underground Cable Fault Distance Conveyed over GSM
206. GSM based Garbage and Waste Collection Bins Overflow Indicator
207. Data Communication or Machine Controlling through GSM System
208. SMS based Device Control using GSM Modem with Status Message
209. Personal Computer High Security using GSM with an Alert Message
210. GSM Modems based Irrigation Water Pump Controller for Illiterates
211. Green House Environment Monitoring and Controlling using GSM
212. Public Transportation Management through GSM for GSRTC
213. Cell Phone based Boiler ON or OFF System using GSM Modem
214. Control System for Modern House-GSM, Timer, LDR, Temperature
215. GSM based Remote Monitoring of Eight Parameters of Transformer
216. Power Theft, Mains Fail Monitoring and Load Control using GSM
217. Robotic Car Operated by GSM Modem(any remote location)
218. An Online Monitoring System of Temperature and Controlling through GSM SMS
219. Thermoelectric PELTIER Cooler with Temperature Controller using GSM Modem
220. ON/OFF Program Time Changing for Electrical Appliances by Wireless(GSM) Method
221. Industrial Appliances Monitoring and Controlling System Using GSM with Auto Alerts
222. Detecting Power Theft Prior to Feeding Energy Meter and Intimating to Control Room by GSM
223. Integrated Energy Management System based on GSM Protocol with Acknowledgement Feature

224. AC Power Line (AC 230v) through All Industrial Electrical Appliances Controlling (ON or OFF) Indicating System by GSM

Other Wireless Communication System:

225. WI-FI Operated Robot
226. Wireless Power Transfer
227. Wireless Elevator System
228. Zig Bee based Wireless Notice Board
229. Wireless Power Driven Car or Train
230. Remote Alignment Of 3D Dish Positioning
231. LI-FI base Guiding System in Historical Place
232. Voice Recording (30 sec) with USB Mp3 Interfacing
233. Zig Bee based Wireless Data Uploading Automation
234. Listen Privately to TV Audio Wirelessly Over FM Band
235. Wireless Power Transfer by High-Frequency Resonating Coils
236. Wireless Touch Screen base Ordering System for Restaurants
237. Automatic Wireless Health Monitoring System in Hospitals for Patients
238. Dedicated Message Communication Wirelessly between Two Computers

7. Project-Based on Security (Alarm) System

Here are some different project ideas you can develop for security and safety purposes.

239. Baby Protecting Alarm
240. Smart Helmet for Smart City
241. Gas Detector with Alarm System
242. Two Zone Home Security System
243. Capacitive Touch Electric Switch
244. Three Zone Home Security System
245. Digital Clock using RTC with Alarm
246. Fingerprint-based Security System
247. Car Operating Panel (G+4) System
248. Parking Availability Indication System
249. Automated Elevator with Overload Alert
250. Home Security System with High Alerts
251. Auto Metro Train to Shuttle Between Stations
252. Touch Screen based Industrial Load Switching
253. Touch Screen based Security with Event Logging
254. Railway Track Security System with IR Interfacing
255. Speed Checker to Detect Rash Driving on Highways
256. Gas Leakage Detector and Auto Dialler Controller System
257. Password-based Lock for Bike Security with the Ignition Key
258. OverFlow Water Announcement in the River for People Safety
259. Finger Print and Keypad based Industrial Security Access Control System
260. Fully Automated Home Security System with Missed Call and Message Facility

ELECTRICAL PROJECTS LIST – SIMULATION AND HARDWARE

261. Networking of Multiple Street Junction Signals for Better Traffic Management

8. Project-based on Measuring Instruments

By using the Meter:

262. Non-Contact Tachometer
263. Digital Auto (Rickshaw) Meter
264. Data Logger for Energy Meter with Readings
265. Milk or Petrol Flow Meter with Thermal Printer
266. Milk or Petrol Flow Meter with Data Backup System
267. Accelerometer-based Wheel Chair Controlling
268. Accelerometer-based Automatic Hover Board Machine
269. Device Load Monitor With Programmable Meter For Energy Audit
270. Accelerometer-based Digital Vocaliser for Deaf and Dumb People

By using the Display:

271. Moving Message Display on LCD
272. Water Level Indicator on LCD
273. Electronic Voting Machine with LCD
274. 3 Phase Sequence Checker by LED Indication
275. Scrolling LED-based Lending Operating Panel
276. LED Lamp Dimmer Circuit
277. Rolling Display using LEDs Matrix
278. Virtual Display of Message by Propeller Driven LEDs
279. LDR based Power Saver for Intensity Controlled Street Light
280. Automatic LED Intensity Control with Human Movement
281. Wireless Rolling Display using LEDs Matrix
282. Street Light LED Energy Saver with Vehicle Movement
283. Intelligent Overhead Tank Water Level Indicator
284. Automatic Car Parking Indicator System
285. LCD based College notice board
286. Intelligent Overhead Tank Water Level Indicator
287. Moving Message Display On LCD with Hyper Terminal
288. Remote AC Power Control by Android Application with LCD Display

9. Project-based on Automation System

289. Working Model of Elevator
290. Power Efficient Elevator System
291. Automatic Bottle Filling Machine
292. IoT based Elevator Fault Detection
293. Public Garden Automation System
294. Automatic Body Size Measurement
295. Home Automation using Cell Phone
296. Home Automation by Smart Voice Recognition
297. Long Range Spy Robot with Obstacle Detection

298.	Zig Bee based Automatic Meter Reading System
299.	Home Automation through P.C. with Power Saver
300.	Fire Fighter Robotic Vehicle with Night Vision Camera
301.	Train Automation using IR with Voice Announcement
302.	Industry Process Automation using Programmable Switching
303.	Speech Recognition based Wheel Chair with Elevated Features

You can use PLC and relay controller in the automation project.

10. Project-based on Mobile and Android Application

The list of wireless communication projects can operate or control by using a smartphone android application.

315.	Mobile Operated Pick and Place Robot
316.	Water Irrigation using mobile for Farmer
317.	Android Controlled Robotic ARM Project
318.	Android Mobile-based Automatic Hover Board Machine
319.	Railway Level Crossing Gate Operation Remotely by Android
320.	Cell Phone based DTMF Controlled Garage Door Opening System
321.	Metal Detector Robotic Vehicle Operated by Android Application
322.	Remote Alignment of 3D Dish Positioning by Android Application
323.	Cell Phone Operated Home Automation System using DATA CALL Facility
324.	Home Automation under Wi-Fi through Android Apps from any SmartPhone
325.	Pick and Place Robotic Arm And Movement Controlled by Android Wirelessly
326.	Smart Phone Controlled Traffic Signal Override with Density Sensing System

- Solar Wireless Electric Vehicle Charging System
- Ebike Speed Controller System
- Video Calling/Recording Smartphone Stand
- Peizo Based Visitor Sensing Welcome Mat
- Power Efficient Mini Inverter Project
- Fire Detection and Alarm Mini Project
- Automated Smoking Zone Monitoring & Alerting Project
- Smart Portable Cell Phone Jammer Project
- Wireless Mobile Charging Project
- 3 Phase Induction Motor With Soft Start
- Power Supply With Auto Switching
- Emergency Auto Led Light
- 3Way Failure Analyzer Reset On Temporary Fault or Trip
- Over Voltage Under Voltage Load Protection
- Protecting Induction Motor From Phase & Temperature
- Ultrasonic Radar Project
- Generating DC High Voltage Using Marx Generator
- Advanced Wireless Power Transfer System

ELECTRICAL PROJECTS LIST – SIMULATION AND HARDWARE

- Single Phase Induction Motor With Smooth Start
- Checking Phase Sequence of 3 Phase Supply
- 6 Volt DC to 10 Volt DC Converter
- Footstep Power Generation System
- Ac to High Voltage DC Using Voltage Multiplier Circuit
- Microcontroller less Four Quadrant DC Motor Control
- Smart Wireless Battery Charging With Charge Monitor Project
- Accurate Room Temperature Controller Project
- Industry Process Automation Using Programmable Switching
- Testing Life Cycle Of Electrical Loads Using Down Counter
- AC Power Strength Controller System
- System To Measure Solar Power
- Controlling Solar Energy Charge
- Single Phase Induction Motor With Smooth Start
- Configurable Password Security System
- Supervisory Controlling Plus Data Acquisition For Remote Industry
- Load Control System Using DTMF
- RPM Display For BLDC Motor With Speed Controller
- Multi-Power Supply Using 4 Different Sources For No Break Power Supply
- Cycle Switching Without Harmonics For Industrial Power Control
- AC Power Controller With Programmable Interface
- Load Shedding Time Management With Programmable Interface
- Lamp Illumination Control With Precision
- Digitally Controlled Home Automation Project
- Flexible Ac Transmitter System Using TSR
- Device Load Monitor With Programmable Meter For Energy Audit
- Power Meter billing Plus Load Control Using GSM
- Monthly Electricity Billing Display With Bill SMS Feature
- Industry Power Consumption Penalty Minimization Using AFPC Unit Project
- Commercial Power Saver Project
- Fast Voting Game Project
- Electronic Water Level Controller Device
- E Bicycle Locking System
- Automatic Smoke Detector Alarm
- Synchronously Blinking Emergency Light
- Sound Operated Timer Project
- Smart Burglar Alarm
- Plant Moisture Monitoring System

SIMULATION BASED PROJECTS LIST

ELECTRICAL PROJECTS LIST – SIMULATION AND HARDWARE
M.Tech/ M.E ELECTRICAL SIMULATION 2020-2021Projects List

S.NO	PROJECTS LIST	IEEE
1	A Generalized Carrier-Overlapped PWM Method for Neutral-Point Clamped Multilevel Converters	2020
2	A Generalized Switched Inductor Cell Modular Multilevel Inverter	2020
3	A Low-harmonic Control Method of Bi-directional Three-phase Z-source Converters for Vehicle-to-Grid Applications	2020
4	A Microgrid Based on Wind Driven DFIG, DG and Solar PV Array for Optimal Fuel Consumption	2020
5	A New Step-Up Switched-Capacitor Voltage Balancing Converter for NPC Multilevel Inverter-Based Solar PV System	2020
6	A Single Input Variable FLC for DFIG Based WPGS in Standalone Mode	2020
7	An Efficient Inductive Power Transfer Topology for Electric Vehicle Battery Charging	2020
8	Asymmetrical Triangular Current Mode (ATCM) for Bidirectional High Step Ratio Modular Multilevel Dc–Dc Converter	2020
9	Auto-Tuning Proportional-Type Synchronization Algorithm for DC Motor Speed Control Applications	2020
10	Cascaded Multilevel Inverter Based Power and Signal Multiplex Transmission for Electric Vehicles	2020
11	Cascaded Multilevel PV Inverter With Improved Harmonic Performance During Power Imbalance Between Power Cells	2020
12	Delta-Bar-Delta Neural Network (NN) Based Control Approach for Power Quality Improvement of Solar PV Interfaced Distribution System	2020
13	Dual-T-Type Five-Level Cascaded Multilevel Inverter With Double Voltage Boosting Gain	2020
14	Five-level one-capacitor boost multilevel inverter	2020
15	Generalized Phase-Shift PWM for Active-Neutral-Point-Clamped Multilevel Converter	2020
16	Grid-Connected Wind-Photovoltaic Cogeneration Using Back-to-Back Voltage Source Converters	2020
17	Hybrid cuckoo search algorithm and grey wolf optimiser-based optimal control strategy for performance enhancement of HVDC-based offshore wind farms	2020
18	Implementation of Solar PV- Battery and Diesel Generator Based Electric Vehicle Charging Station	2020
19	Incremental Passivity Control in Multilevel Cascaded H-Bridge Converters	2020
20	Integration of solar PV into grid using a new UPQC with differential inverter control	2020
21	Mitigation of transient overvoltages in microgrid including PV arrays	2020
22	Multilevel Converters with Symmetrical Half-Bridge Submodules and Sensorless Voltage Balance	2020
23	Multilevel Single-Phase Converter with Two DC Links	2020
24	Off-board electric vehicle battery charger using PV array	2020

25	Power optimisation scheme of induction motor using FLC for electric vehicle	2020

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ELECTRICAL PROJECTS LIST – SIMULATION AND HARDWARE

26	Self-Adjustable Step-Based Control Algorithm for Grid-Interactive Multifunctional Single-Phase PV-Battery System Under Abnormal Grid Conditions	2020
27	Sensorless SynRG Based Variable Speed Wind Generator and Single-stage Solar PV Array Integrated Grid System with Maximum Power Extraction Capability	2020
28	Single-phase boost DC-link integrated cascaded multilevel inverter for PV applications	2020
29	Single-Phase Dual-Mode Interleaved Multilevel Inverter (DMIMI) for PV Applications	2020
30	Switched-capacitor multilevel inverter with self-voltage-balancing for high-frequency power distribution system	2020
31	Unbiased Circular Leakage Centered Adaptive Filtering Control for Power Quality Improvement of Wind-Solar PV Energy Conversion System	2020
32	ZPUC: A New Configuration of Single DC Source for Modular Multilevel Converter (MMC) Applications	2020
33	A Generalized Multilevel Inverter Topology with Reduction of Total Standing Voltage	2020
34	A New Asymmetric Multilevel Inverter with Reduced Number of Components	2020
35	A Novel High-Gain DC-DC Converter Applied in Fuel Cell Vehicles	2020
36	A Step-up Multilevel Inverter Topology using Novel Switched Capacitor Converters with Reduced Components	2020
37	Adaptive Control of Voltage Source Converter Based Scheme for Power Quality Improved Grid-Interactive Solar PV- Battery System	2020
38	An Experimental Estimation of Hybrid ANFIS–PSO-Based MPPT for PV Grid Integration Under Fluctuating Sun Irradiance	2020
39	Bidirectional Buck-Boost Current-Fed Isolated DC-DC Converter and Its Modulation	2020
40	Control Algorithm based on Limit Cycle Oscillator-FLL for UPQC-S with Optimized PI Gains	2020
41	Enhanced DVR Control System based on the Harris Hawks Optimization Algorithm	2020
42	Grid Synchronization of WEC-PV-BES Based Distributed Generation System using Robust Control Strategy	2020
43	High Performance Frequency Converter Controlled Variable-Speed Wind Generator Using Linear-Quadratic Regulator Controller	2020
44	Improved Power Quality in a Solar PV Plant Integrated Utility Grid by Employing a Novel Adaptive Current Regulator	2020
45	Improving Microgrid Low-Voltage Ride-Through Capacity Using Neural Control	2020
46	Nonisolated DC-DC Converters with Wide Conversion Range for High-Power Applications	2020
47	Power Quality Improvement in Solar Fed Cascaded Multilevel Inverter with Output Voltage Regulation Techniques	2020
48	PSO optimized PIDF controller for Load-frequency control of A.C Multi-Islanded-Micro grid system	2020

49	Single-Stage PV-Grid Interactive Induction Motor Drive with Improved Flux Estimation Technique for Water Pumping with Reduced Sensors	2020
50	Switched Capacitor Integrated (2n+1)-Level Step-up Single-Phase Inverter	2020

ELECTRICAL PROJECTS LIST – SIMULATION AND HARDWARE

M.Tech/ M.E ELECTRICAL SIMULATION 2019-2020 Projects List

01	Power Factor Correction of Three-Phase PWM AC Chopper Fed Induction Motor Drive System Using HBCC Technique.	2019
02	A Power Electronic Traction Transformer Configuration with Low-Voltage IGBTs for Onboard Traction Application.	2019
03	Carrier-Based Digital PWM and Multirate Technique of a Cascaded H-Bridge Converter for Power Electronic Traction Transformers.	2019
04	Operation Analysis and A Game Theoretic Approach to Dynamic Hybrid Compensator for the V/v Traction System.	2019
05	Coordination of MMCs With Hybrid DC Circuit Breakers for HVDC Grid Protection.	2019
06	A New Multilevel Inverter Topology With Reduce Switch Count.	2019
07	A Novel Multilevel DC/AC Inverter Based on Three-Level Half Bridge With Voltage Vector Selecting Algorithm	2019
08	A Novel Sub module Voltage Balancing Scheme for Modular Multilevel Cascade Converter—Double-Star Chopper-Cells (MMCC-DSCC) Based STATCOM.	2019
09	A Single-Phase Transformer-Based Cascaded Asymmetric Multilevel Inverter With Balanced Power Distribution.	2019
10	Active power decoupling and controlling for single-phase FACTS device.	2019
11	Analysis of Logic Gates for Generation of Switching Sequence in Symmetric and Asymmetric Reduced Switch Multilevel Inverter.	2019
12	Design and Hardware Implementation Considerations of Modified Multilevel Cascaded H-Bridge Inverter for Photovoltaic System	2019
13	Direct Model Predictive Control of Novel H-Bridge Multilevel Inverter Based Grid-Connected Photovoltaic System.	2019
14	Fuel cell integrated unified power quality conditioner for voltage and current reparation in four-wire distribution grid.	2019
15	Grid-tied single source quasi-Z-source cascaded multilevel inverter for PV applications.	2019
16	Low Switching Frequency Based Asymmetrical Multilevel Inverter Topology With Reduced Switch Count.	2019
17	Optimal Design of a New Cascaded Multilevel Inverter Topology With Reduced Switch Count.	2019
18	Switch Ladder Modified H-Bridge Multilevel Inverter With Novel Pulse Width Modulation Technique.	2019
19	Role of Outage Management Strategy in Reliability Performance of Multi-Micro grid Distribution Systems.	2019
20	Improved Coordinated Control Strategy for Hybrid STATCOM Using Required Reactive Power Estimation Method.	2019
21	Fault tolerant single-phase capacitor start capacitor run induction motor powered with cascaded multilevel quasi impedance source inverter.	2019
22	Coordination control of positive and negative sequence voltages of cascaded H-bridge STATCOM operating under imbalanced grid voltage.	2019

23	Control and operation of the MMC-based drive with reduced capacitor voltage fluctuations	2019
24	Application of UPFC to mitigate SSR in series compensated wind farms	2019

ELECTRICAL PROJECTS LIST – SIMULATION AND HARDWARE

25	A Unified Power Flow Controller Using a Power Electronics Integrated Transformer	2019
26	A 13-levels Module (K-Type) with two DC sources for Multilevel Inverters	2019
27	A Boost Type Nine-Level Switched Capacitor Inverter	2019
28	A Hybrid 9-level, 1-ϕ Grid Connected Multi Level Inverter with Low Switch Count and Innovative Voltage Regulation Techniques Across Auxiliary Capacitor.	2019
29	A Multi-Cell Cascaded High Frequency Link Inverter with Soft-Switching and Isolation.	2019
30	A new pulse active width modulation (PAWM) for multilevel converters.	2019
31	A new standby structure integrated with boost PFC converter for Server Power supply.	2019
32	A Novel Bidirectional T-type Multilevel Inverter for Electric Vehicle Applications.	2019
33	A Novel Nine-Level Quadruple Boost Inverter with Inductive-load Ability.	2019
34	A Novel Step-Up Single Source Multilevel Inverter: Topology, Operating Principle and Modulation.	2019
35	A Second-Order Volterra Filter Based Control of Solar PV-DSTATCOM System to Achieve Lyapunov's Stability	2019
36	A Sinusoidal Pulse Width Modulation (SPWM) Technique for Capacitor Voltage Balancing of Nested T-Type Four-Level Inverter.	2019
37	Analysis, Design and Control of Switching Capacitor Based Buck-Boost Converter	2019
38	Compact Switched Capacitor Multilevel Inverter (CSCMLI) With Self Voltage Balancing and Boosting Ability.	2019
39	Coordination control of positive and negative sequence voltages of cascaded H-bridge STATCOM operating under imbalanced grid voltage.	2019
40	Cross-Switched Multilevel Inverter using Novel Switched Capacitor Converters.	2019
41	Dual P-Q Theory based Energy Optimized Dynamic Voltage Restorer for Power Quality Improvement in Distribution System	2019
42	Dual Role CDSC based Dual Vector Control for Effective Operation of DVR with Harmonic Mitigation	2019
43	Dual-T-Type Seven-Level Boost Active-Neutral Point-Clamped (DTT-7L-BANPC) Inverter	2019
44	Effect of cascade STATCOM on stabilizing voltage in high voltage direct current	2019
45	Enhancement of Solar Farm Connectivity with Smart PV Inverter PV-STATCOM.	2019
46	Extended Topology for Boost DC-DC Converter.	2019
47	Family of Multiport Switched-Capacitor Multilevel Inverters for High Frequency AC Power Distribution	2019
48	Flexible Transformer Based Multilevel Inverter Topologies	2019

49	Framework of Gradient Descent Least Squares Regression Based NN Structure for Power Quality Improvement in PV Integrated Low-Voltage Weak Grid System	2019

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ELECTRICAL PROJECTS LIST – SIMULATION AND HARDWARE

50	High-Efficiency Bidirectional Buck-Boost Converter for Photovoltaic and Energy Storage Systems in a Smart Grid	2019
51	Implementation of Immune Feedback Control Algorithm for Distribution Static Compensator.	2019
52	Low-Capacitance Statcom with Modular Inductive Filter	2019
53	Model Predictive Control of Multilevel CHB STATCOM in Wind Farm Application Using Diophantine Equations	2019
54	Model Predictive Controller with Reduced Complexity for Grid Tied Multilevel Inverters.	2019
55	PNKLMF Based Neural Network Control and Learning based HC MPPT Technique for Multi-Objective Grid Integrated Solar PV Based Distributed Generating System	2019
56	Power Quality Improvement and PV Power Injection by DSTATCOM with Variable DC Link Voltage Control from RSC-MLC.	2019
57	Protection of Sensitive Loads Using Sliding Mode Controlled Three-Phase DVR With Adaptive Notch Filter.	2019
58	Real-Time Validation of a Sliding Mode Controller for Closed-Loop Operation of Reduced Switch Count Multilevel Inverters	2019
59	Single Stage SECS Interfaced with Grid Using ISOGI-FLL Based Control Algorithm.	2019
60	SSO of DFIG-based wind farm integrated by a hybrid series compensator.	2019
61	Stability Analysis for the Grid-Connected Single Phase Asymmetrical Cascaded Multilevel Inverter with SRF-PI Current Control under Weak Grid Conditions	2019
62	Switched-Boost Action Based Multi-port Converter.	2019
63	Switched-Capacitor Based Single Source Cascaded H-bridge Multilevel Inverter Featuring Boosting Ability	2019
64	Unbalanced and Reactive Load Compensation using MMCC-based SATCOMs with Third Harmonic Injection.	2019

M.Tech/ M.E 2018-2019 Projects List

1	Standalone Photovoltaic WMSRer Pumping System Using Induction Motor Drive with Reduced Sensors	2018
2	A Novel Design of Hybrid Energy Storage System for Electric Vehicles	2018
3	Single Stage PV Array Fed Speed Sensor less Vector Control of Induction Motor Drive for WMSRer Pumping.	2018
4	Design and Performance Analysis of Three-Phase Solar PV IntegrMSRed UPQC.	2018
5	A New H-Bridge Hybrid Modular Converter (HBHMC) for HVDC ApplicMSRion: OperMSRing Modes, Control and Voltage Balancing	2018
6	Rectifier Load Analysis for Electric Vehicle Wireless Charging System.	2018

7	Development of a Bidirectional DC/DC Converter with Dual-BMSRtery Energy Storage for Hybrid Electric Vehicle System.	2018

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8	An Improved DC-Link Voltage Control StrMSRegy for Grid Connected Converters.	2018
9	Design and ImplementMSRion of Active Power Control with Improved P&O Method for Wind PV-BMSRtery based Standalone GenerMSRion System	2018
10	Single-stage ZETA-SEPIC-based multifunctional integrMSRed converter for plugin electric vehicles	2018
11	Modeling, Design, Control, and ImplementMSRion of a Modified Z-source IntegrMSRed PV/Grid/EV DC Charger/Inverter	2018
12	A Simple Active and Reactive Power Control for ApplicMSRions of Single-Phase Electric Springs	2018
13	UDE-Based Current Control StrMSRegy for LCCL-Type Grid-Tied Inverters	2018
14	A New Design Method of an LCL Filter Applied in Active DC-Traction SubstMSRions	2018
15	A Very High Resolution Stacked Multilevel Inverter Topology for Adjustable Speed Drives	2018
16	ImplementMSRion and Comparison of Symmetric and Asymmetric Multilevel Inverters for Dynamic Loads	2018
17	ReconfigurMSRion of NPC Multilevel Inverters to MitigMSRe Short Circuit Faults Using Back-to-Back Switches	2018
18	Irradiance-adaptive PV Module IntegrMSRed Converter for High Efficiency and Power Quality in Standalone and DC Microgrid ApplicMSRions	2018
19	Dual-function PV-ECS integrMSRed to 3P4W distribution grid using 3M-PLL control for active power transfer and power quality improvement.	2018
20	ZSI for PV systems with LVRT capability.	2018
21	Crisscross switched multilevel inverter using cascaded semi-half-bridge cells	2018
22	Single-phase hybrid cascaded H-bridge and diode-clamped multilevel inverter with capacitor voltage balancing	2018
23	Control of Solar Photovoltaic IntegrMSRed Universal Active Filter Based on Discrete Adaptive Filter	2018

24	A Buck & Boost based Grid Connected PV Inverter Maximizing Power Yield from Two PV Arrays in MismMSRched Environmental Conditions	2018
25	A Grid Connected Single Phase Transformerless Inverter Controlling Two Solar PV Arrays OperMSRing under Different MSRmospheric Conditions	2018
26	Single-phase multilevel inverter topologies with self-voltage balancing capabilities	2018
27	A Three-Phase Symmetrical DC-Link Multilevel Inverter with Reduced Number of DC Sources	2018
28	A Bridge Modular Switched-Capacitor-Based Multilevel Inverter With Optimized SPWM Control Method And Enhanced Power-Decoupling Ability	2018
29	Single-Phase Modified Quasi-Z-Source Cascaded Hybrid Five-Level Inverter	2018
30	Improved control algorithm for grid connected cascaded H-bridge photovoltaic inverters under asymmetric operMSRing conditions	2018
31	Power-decoupling of a Multi-port IsolMSRed Converter for an Electrolytic-capacitorless Multi-level Inverter.	2018
32	VerificMSRion of a low Components Nine-Level Cascaded-Transformer Multilevel Inverter in Grid Tie Mode.	2018
33	Power management in PV-bMSRtery-hydro based standalone microgrid	2018
34	Hybrid Cascaded Multilevel Inverter (HCMLI) with Improved Symmetrical 4-Level Submodule	2018
35	Single-Stage Switched-Capacitor Module (S3CM) Topology for Cascaded Multilevel Inverter	2018
36	CombinMSRion Analysis and Switching Method of a Cascaded H-Bridge Multilevel Inverter Based on Transformers With the Different Turns RMSRio for Increasing the Voltage Level	2018
37	Research on the Unbalanced CompensMSRion of Delta-connected Cascaded H-bridge Multilevel SVG	2018
38	Autonomous Power Management for Interlinked AC-DC Microgrids	2018
39	Multi-Input Switched-Capacitor Multilevel Inverter for High-Frequency AC Power Distribution	2018
40	Phase Shifted Carrier Based Synchronized Sinusoidal PWM Techniques for Cascaded H-Bridge Multi Level Inverter	2018
41	Autonomous Power Control and Management Between Standalone DC Microgrids	2018
42	Soft Switched Interleaved DC/DC Converter as front-end of Multi Inverter Structure for Micro Grid ApplicMSRions	2018
43	Dynamic Power Management and Control of PV PEM fuel Cell based Standalone AC/DC Microgrid Using Hybrid Energy Storage	2018
44	ISOGI-Q Based Control Algorithm for Single Stage Grid Tied SPV System	2018
45	An Improved ModulMSRed Carrier Control with On-Time Doublers for Single-Phase Shunt Active Power Filter	2018
46	An f-P/Q Droop Control in Cascaded-Type Microgrid	2018
47	Three-Phase Transformer-less Shunt Active Power Filter with Reduced Switch Count for Harmonic CompensMSRion in Grid-Connected ApplicMSRions	2018
48	Control of a Three-Phase Hybrid Converter for a PV Charging StMSRion	2018

All Electrical Projects List

MSR PROJECTS

49	Reduced carrier PWM scheme with unified logical expressions for reduced switch count multilevel inverters	2018
50	A Novel Hybrid Modular Three-Level Shunt Active Power Filter	2018