

Smart Home Automation System

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Abstract

It is basically known that any electrical appliance is controlled with a switch that regulates the electricity to electrical devices. This project puts forth the equipment which enables users to control their home appliances using their cellular phone. It shows the construction and working of the device to wirelessly control the home appliances based on Global System for Mobile Communication (GSM) networking and ATMEGA32 microcontroller. Initially an authenticated signal is sent from the user's cellular phone via GSM network to the phone which is fixed to the equipment. This signal or code consists of the information about the function or action to be taken place i.e. what appliance should be turned off or turned on. The receiver phone receives the Dual Tone Multi Frequency (DTMF) signal or a SMS message that is send from the user's phone and then sends it to the DTMF decoder or the GSM modem which in turn sends the output digital signal to the microcontroller. Then the microcontroller, based on the received signal, controls the different relays connected through ULN2003 (Darlington transistor) and triggers the required appliance.

Smart Irrigation System using soil moisture sensor

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Abstract

Our project focuses on the effective irrigation and prevention of water wastage in uncontrolled irrigation. New irrigation electrical control technologies could improve irrigation efficiency, promoting water conservation. The objectives of this project were to avoid wastage of water and increase irrigation efficiency by using a microcontroller based irrigation system with the help of soilmoisture sensor and GSM module. It alsoimproves the traditional irrigation system enabling the irrigationsystemand low water usage. This microcontroller based sprinkler irrigation system gives the best feature than the traditional one.

Multipurpose Energy Meter

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Name of Guide: Mr. Santoshkumar Hunachal

Abstract

The purpose of this “Multipurpose Energy Meter” project is remote monitoring and control of the Domestic Energy meter. This energy meter enables consumer to measures Electricity, Water & Gas without billing system.

This system also makes use of a GSM modem which sends message on the left over recharge amount in the prepaid card. This system also can be used to disconnect the power supply to the house in case of non-payment of electricity, water & gas bills.

The consumer is facing problems like receiving due bills for bills that have already been paid as well as poor reliability of electricity supply and quality, even if bills are paid regularly. The remedy for all these problems is to keep track of the consumers load on a timely basis, which will help assure accurate billing, track maximum demand, and detect on theft.

Electrical Workstation

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Name of Guide: Mr. SatishGhorpade

Abstract

Basically a Control Panel has only one control for particular operation of Induction Motor. But challenging aim is to make single panel with multiple controls on it for different operations of Induction motor and also it should be economical.

This project contains multiple controls for Induction Motors. Project is based on electromechanical and Programmable Logic Controller (PLC). Using minimum electrical component the number of control is to be implemented. The flexibility and efficient controllability of PLC helps in the growth of automation. With the help of PLC, maximum controls on a panel is implemented and will have automatic control.

The software setup that is Ladder diagram of (PLC) help hardware communication with the electrical component. The hardware setup of Logic operation, Forward-Reverse, Sequence operation, Inter locking of two motors, Direct On Line (DOL), Star-Delta.

Wireless Low Power Transmission

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Abstract

Wireless communication would be the transmission in the energy spanning through a distance without the usage of wires or cables, where distance can be short or long. Wireless operations permits services, for example long-range communications, which are merely unfeasible using wires. Wireless energy transfer or wireless power transmission may be the transmittance of electric power from your power source for an electrical load without interconnecting wires. Wireless transmission is advantageous in instances where interconnecting wires are inconvenient, hazardous, or impossible.

Underground Cable Fault Distance Locator

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Abstract

The project purpose is to determine fault location for underground cable using microcontroller in kilometers. The project is based on concept of ohm's law. When any fault like short circuit occurs, voltage drop will vary depending on the length of fault in cable ,since the current varies. A set of resistors are used to represent the cable and a dc voltage is fed at one end and the fault is detected by detecting the change in voltage using a analog to voltage converter

Microcontroller is used to make the necessary calculations so that the fault distance is displayed on the LCD display.

Power Generation by Low Wind Speed Turbine

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Abstract

The aim of this project is to generate power by low wind speed using vertical axis wind turbine at college site and measure the generated output power. The proposed model uses hybrid combination of both the Savonius and Darrieus type of vertical axis wind turbines. The Savonius rotor creates high torque and is self-starting even at low wind speeds, but is relatively low in efficiency rating. The Savonius rotor is used to start the straight bladed Darrieus rotor. The Darrieus rotor is not a self starting rotor, but has much higher efficiency than the Savonius rotor. The combination of rotors increases the total power of the turbine in lower wind speeds.

Pico Hydro Power Generation

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Abstract

Country growth is depends upon energy and especially our country is in position to produce more electricity to increase the growth. In energy sector electrical energy is important. In electrical energy use of renewable power is important. The energy demand in India increasing day by day due to increasing population. But in present era there are too many obstacles which decrease the consumption of electricity for common peoples, for high cost of fuel and low supply of fuel. Fuels like coal, petroleum, CNG, LPG, nuclear energy are depleting day by day and also degrades our eco-system. Installation cost of large hydro power plant are very high and can't be installed anywhere. Due to this reason, concept of power generation can do by using hydro in small scale. This will reduces energy consumption from grid system up to certain period of time. This generated power can use to house hold application or lightning during irrigation at night.

Adaptive Electricity Scheduling

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Name of Guide: Dr.K.D Desai

Abstract:

The balance of supply and demand of electric energy is one of the most important requirements of MG management. In this project, we are going present a novel framework for smart energy management based on the concept of quality-of-service in electricity (QoSE). Specifically, the resident electricity demand is classified into basic usage and quality usage. The basic usage is always guaranteed by the MG, while the quality usage is controlled based on the MG state. The microgrid control center (MGCC) aims to minimize the MG operation cost and maintain the outage probability of quality usage, i.e., QoSE, below a target value, by scheduling electricity among renewable energy resources, energy storage systems, and macrogrid.

The problem is formulated as a constrained stochastic programming problem. The Lyapunov optimization technique is then applied to derive an adaptive electricity scheduling algorithm by introducing the QoSE virtual queues and energy storage virtual queues. The proposed algorithm is an online algorithm. We derive several “hard” performance bounds for the proposed algorithm, and evaluate its performance with trace-driven simulations. The simulation results demonstrate the efficacy of the proposed electricity scheduling algorithm.

Maximum Demand Controller by Using PC

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Name of Guide: Mr. Amol Khodke

Abstract

High-tension (HT) consumer has to pay maximum demand charge in addition to the usual charge for the number of units consumed. This charge is usually based on the highest amount of power used during some period (say 30 minutes) during the metering month. The maximum demand charge often represents a large proportion of the total bill and may be based on only one isolated 30 minutes episode of high power use. Considerable saving can be realized by monitoring power use and turning off or reducing non essential loads during such periods of high power use.

Maximum demand control the device designed to meet need of industries conscious of the value of load management. Alarm is sound when the demand approaches a present value. If corrective action not taken, the controller switches of non critical loads in a sequence .An electrical demand control program is highly recommended in the processes with an operation that has large variations in the maximum demand and low load factors, such as smelting, mining, automotive, textile and paper companies among others .Traffic application in industries ensures that they manage their load efficiently during peak period using MD controller. The energy consumption in residential sector is increasing daily. There is need for load management to be exercised by the domestic user as well. Hence we can configure the MD controller according to the domestic design also.

Single axis Solar Tracking with MPPT

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Name of Guide: Mr. Satish Ghorpade

Abstract

This report is about solar tracking system by using Light Dependent Resistor (LDR) and Microcontroller PIC16F8. The most energy is absorbed by solar panel when a surface face is perpendicular to the Sun. Stationary mounted PV panels are only perpendicular to the sun once a day. This report present the design and construction of a solar tracking system that position the solar PV panel in proper orientation with the sun so as to always receive direct radiation. The microcontroller controls the system by communicating with the sensors and motor driver based on movement of the Sun. A Cleaning system is provided for cleaning purpose of solar panel in order to receive maximum solar radiations which will operates manually. It will consist one DC motor to drive the conveyer belt having sponge arrangement on its lower surface resting on solar panel and water sprinkler arrangement to provide necessary water for cleaning.

Modified Solar Inverter

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Mr.Patil Vaibhav Shivram

Name of Guide: Mr. Amol Khodke

Abstract

The electricity scarcity haunts India for years,the reason for choosing this project was simple,to somehow initiate a step towards ending this crisis

Our project deals with providing an output of near sinewave which is the much better than the traditional square-wave inverter.The output of the square-wave inverter has a limited use.While the near sinewave can act as sine wave and provide much better usefulness and is efficient than the square wave inverter.

Also it is a solar base product,the conventional resources are not wasted and the non-conventional resource is used to its fullest.

Thus considering load shedding problem faced in rural areas of India and also for shopkeepers/Kawkars at evening,our project might give them 'hope of light'.

Designing of smart E-Vehicle

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Name of Guide: Dr.Kamlakar Desai

Mr.Maheshkumar kamad

Abstract

The general mode of transportation for local trip (with in a range of 5-10km) is a bicycle, motor cycle or electrical bicycle. Bicycle are the cheapest, healthiest and ecofriendly but poses problem in climbing slopes. If we utilize solar power for local conveyance, a large amount of currency can be saved and we can also ensure pollution free environment and contribute to nation's economy .

The electric Bicycle system is a system project that incorporates three different ways of charging a lithium-ion battery: the 230 VAC wall outlet ,regenerative braking ,and solar station; which is used to power an electric hub motor running a bicycle. The purpose of the project is to show that it is possible and relative simple, to build an electric bicycle by oneself. This project can be broken down into two separate categories: electronic component selection like the battery, the motor, and the motor controller and second mechanical assembling of cycle. Each of these will be built upon and improved further by future students, one category at a time. The hope is that this design can become very efficient, cost-effective, and one day mass-produced, especially in developing countries where automotive transportation is an important.

Speed Control Of Three Phase Induction Motor By V/F Method

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Abstract

There are different methods of speed control of three phase induction motor and to control the speed of three phase induction motor generally using V/F strategy. Out of the a number of methods of speed control of an induction such as pole changing, frequency variation, variable rotor resistance, variable stator voltage, constant V/f control, slip recovery method etc.the constant V/f speed control method is the majority generally used. In this method, the V/f ratio is kept constant which in turn maintains the magnetizing flux constant so that the maximum torque remain unchanged.Thus,the motor is totally utilized in this method.

Microcontroller based transformer Protection

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Name of Guide: Mr.Amol.S.Khodke

Abstract

The electrical equipment and circuit in a substation must be protected in order to avoid the fault .The primary objective of transformer protection is to detect internal fault in the transformer. These project based on microcontroller due ti which hardware requirement is reduced. In these projects two parameters are measured such as voltage and current. Also step down transformer are used .This transformer step down the voltage from 230V to 160V.In this project we detect and protect the transformer from internal faults such as under voltage, over voltage and over current. We fill that our product serves something good to this world and we like to present it before this prosperous world. By doing this project we were better able to understand the various facts of doing an embedded system project which is emerging as one of the most in demand technologies right now.