



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

AVR microcontroller based Solar tracking

This is a power generating method from sunlight. This method of power generation is simple and is taken from natural resource. The aim of the project is to set the solar panel for maximum power generation using the maximum sunlight available. A stepper motor system is used for tracking maximum intensity of light. When there is decrease in intensity of light, this system automatically changes its direction to get maximum intensity of light.

Here we are using two sensors in two directions to sense the direction of maximum intensity of light. The difference between the outputs of the sensors is given to the AVR microcontroller unit.

It will process the input voltage from the comparison circuit and control the direction in which the motor has to be rotated so that it will receive maximum intensity of light from the sun. The power generated from this process is then stored in a lead acid battery and is made to charge an emergency light and is made to glow during night. The ATmega8535 is a low-power CMOS 8-bit microcontroller based on the AVR enhanced RISC architecture. ATmega8535 has such features as 8 KB of in-system programmable flash memory (i.e., read-while-write capabilities), 512-byte EEPROM, 512-byte SRAM, 32 general-purpose input/output (I/O) lines, 32 general-purpose working registers, three flexible timers/counters with compare modes, internal and external interrupts, a serially programmable USART, a byte-oriented two-wire serial interface, an 8-channel, 10-bit analogue-to-digital converter (ADC) with optional differential input stage with programmable gain, a programmable watchdog timer with internal oscillator, an SPI serial port, and six software-selectable power-saving modes. The AVR core combines a rich instruction set with 32 general-purpose working registers.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

ZERO VOLTAGE SWITCH

A zero voltage switch (ZVS) DC link, single-phase, pulse width-modulated voltage source inverter (VSI) is proposed. Operating principle and various operating intervals of the converter are presented and analyzed. Design consideration is discussed and a design example of experimental results from a laboratory model is also presented.

In proposed ZVS DC link technique, the switch voltage is clamped to the dc link voltage and PWM scheme can be used to control the inverter output voltage. The PWM modulation scheme is modified to obtain optimum system performance and to achieve ZVS at different power factor loads.

The design procedure is illustrated with a design example. An experiment prototype laboratory model 300V, 120V, 60HZ VSI operating at 50KHZ is implemented using MOSFET and IGBTs. Experimental results confirm the theory and show the soft switching characteristics of the proposed VSI.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

FPGA Implementation of data acquisition for power system

Abstract

The power plant monitoring and control system by implementing data Acquisition is mainly to collect the real time parameters and to control if it exceeds the pre-defined value. Implementation of this project in a power plant is to monitor and control the real time temperature , power, intruder security, water level. Whenever the real time variable obtained goes the threshold value designed, the power plant operation is automatically shut down to avoid hazard condition.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

SPEED CONTROL OF THREE PHASE INDUCTION MOTOR USING ZIGBEE ENTECHNOLOGY

ABSTRACT

The project titled "SPEED CONTROL OF INDUCTION MOTOR USING ZIGBEE TECHNOLOGY" is a part of wireless automation. In this project we are going to speed of three phase induction motor from remote. Here, the speed of the induction motor is going to be control from Remote by variable frequency control technique known as V/f control technique, in which natural Pulse Width Modulation technique is used to drive voltage source inverter. The inverter driver circuit is commanded from remote by using zigbee technology using PIC Pulse generator. The command is programmed on PC and then encoded & fed to Zigbee transmitter from remote. The receiver will sense the command and further decoding it provides to the PIC pulse generator. The signal received from pulse generator is amplified by driver circuit and fed to the VSI inverter.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

EMBEDDED BASED RADIO FREQUENCY SPEED CONTROL OF DC MOTOR

The project "EMBEDDED BASED RADIO FREQUENCY SPEED CONTROL OF DC MOTOR" is used to varying Speed of The dc motor. It is need a DC to DC converter is a Circuit Which converts a source of direct current (DC) from one voltage Level to Another.

Linear regulators output can only in low in low voltage From the Input.

They are very inefficient if the voltage drop is large and the Current high as they dissipate as heat, a power equal To the product of the output current and the voltage drop; Consequently are not normally used for large-drop high-current Application. It is practically if the current is low, the power Dissipated being small, although it may still be a large fraction of The total power consumed. Simple regulator power supply used For higher currents. A transformer generates a voltage when Rectified, is a little higher than that needed to bias the linear Regulator. A High frequency MOSFET as the power electronics switch, It reduces switching losses. A 230V, 3000 rpm D.C loads to Demonstrate the converters application in speed control. The simulation Of the code where done in keil IDE pack. A second Module remote Control machine by using the 8 relays. It is to be control 8 machines Remotely.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Wireless video transmitters

Wireless video transmitters are used to send video signals over transmitters to receivers through wireless signals enabling for a more efficient means of transmission than the hard wired counterparts. The wireless video transmitters can be seen in different types of wireless devices. The video transmitters and receivers are seen in video links used in construction site, parking lot, property and golf course monitoring. They enable users to monitor for safety, dangers and trespassing purposes. If problems are seen, actions can be taken right away to fix them.

Wireless audio and video transmitters and receivers are also seen in airborne video systems. They used with airborne vehicles such as hot air balloons, airplanes, helicopters, blimps and even rockets. The wireless video transmitters enable users to monitor systems from above.

The wireless audio video transmitters can also be seen on rural farms. The wireless video transmitters enable the livestock owner be aware of when live births are going on within the farm. Care can be taken right away when the birth is known sooner. The wireless video transmitter receiver can also be seen in wireless home security systems. The wireless video transmitters can allow a homeowner to have peace of mind when placing their security video cameras in areas of their choice to monitor their property.

Hard wired systems limit them to only certain areas of placing their equipment. The wireless video transmitters can also be seen used in video baby monitors. Mothers with new babies can now watch their baby is doing without having to wake them up every time they enter a room to check up on them.

It enables them to go to their baby if they see something happening right away. The wireless uhf video transmitters enable signals to be sent through the wireless network for cable television access. The best wireless video transmitters can be found within the largest



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

providers of wireless transmitter technology. They spend a lot of time studying their wireless transmitter and receiver products to keep their quality devices working up to their good name.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

DSP based Transmission line transient analyzer

Transient studies of transmission lines in electric networks are presently done in electric networks using computer or Transient Network Analysers (TNA). The proposed work aims in implementation of DSP based transmission line Fault classifier and Locator.

Need for DSP based Transmission line transient analyzer

1. Fast repair to restore power system from outages,
2. Improves system availability and performance as well as reduces operating costs.
3. Saves time and expense of crew searching in bad weather and tough terrains.
4. Helps crew in disturbance diagnostics by:
 - identifying temporary faults,
 - detecting weak spots

Harmonics are periodic signals that occur in power systems due to various reasons. The frequency of harmonics is an integer multiple of the fundamental frequency of the power system which is 50 Hz. The presence of high frequency harmonics in voltages and currents of a power system is a key signal for identification of faults in power systems. Therefore, DSP based monitoring of the harmonics for admissible levels become necessary for reliable distribution of electric energy.

The DSP technology brings unquestionable improvements in fault classification and location in a shorter time; input signals are filtered-out more precisely; it is easy to apply sophisticated corrections; the hardware is standardized and may communicate with other protection and control systems. The proposed work starts with the development of a hardware arrangement for the simulation of various types of faults, transients similar to that occurring in power systems are generated and are processed through a DSP processor. The processed outputs are feed for wavelets



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

analysis. On identification of type of fault a support vector machine (SVM) based fault location algorithm is called.

ANN based fault Location

Since ANNs can provide excellent pattern recognition, they are proposed by many researchers to perform different tasks in power system relaying for signal processing and decision making. Implementation of ANN has the following steps:

1. Additional pre- and post-processing are applied to the ANN structure for training. The training patterns exposed to the ANN cover the most important operating conditions both faults and other disturbances.
2. The ANN is fed either with non-processed samples of the input signals, or by features of those signals extracted using certain measuring algorithms (or by a combination).
3. The sliding data widow consisting of the recent and a few historical samples of the signals is then fed to the ANN.
4. The output from the ANN encodes the output decision such as type of fault, location of fault etc.

DSP for analysis of Transients

The CCStudio is a easy to use Integrated Development Environment (IDE) which allows DSP designers of all experience levels to move quickly through each phase of the application development process including design, code and build, debug, analyze, and tune. The familiar tools and interfaces allow users to get started faster and become productive immediately. The signals processed through DSP hardware are further analysis used wavelets for fault type identification.

The total estimated project cost is around RS 10, 75,000 (Ten Lakhs seventy five thousand)



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

VLSI design of median filter

Filters are linear systems employed for removal of noise from useful signals. Conventional IIR filters and FIR filters are highly involved. In general They are computational algorithms requiring definite delay between input and the outputs. However long tailed noise such as exponential and laplasion distribution noise are difficult to remove using conventional linear filters.

Median filters are a class of non linear filters having advantages

1. Capability to remove long tailed noise
2. Capability to preserve edge information

The most desirable property of median filters is that they are based on signal “sorting and selection operations”. No Computation is involved. Therefore, they are the most suitable for real time VLSI.

Uses

1. Image processing
2. Communication networks



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

VLSI based asynchronous Receiver and Transmitter

The aim of this project is to design and implement an asynchronous receiver, transmitter using verilog hardware description language. In this project we have used serial mode of transmission because in parallel mode of transmission we need 'n' number of cable to transmit "n" bits of data. The following features mainly distinguishes our project from other similar devices

- full duplex operation
- standard data format
- even or odd parity
- parity error check
- over run error check
- receiver data ready
- transmitter data ready

VLSI design Based Three phase power Inverter Gating

A three phase inverter is a common unit found in industrial drives meant for control of induction motors. Convention gating circuit meant for gating of inverters has the following problems.

1. Circuit Delays. Large complicated circuits running at very high frequencies have one big problem to tackle - the problem of delays in propagation of signals through gates and wires ... even for areas a few micrometers across! The operation speed is so large that as the delays add up, they can actually become comparable to the clock speeds.
2. Power. Another effect of high operation frequencies is increased consumption of power. This has two-fold effect - devices consume batteries faster, and heat



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

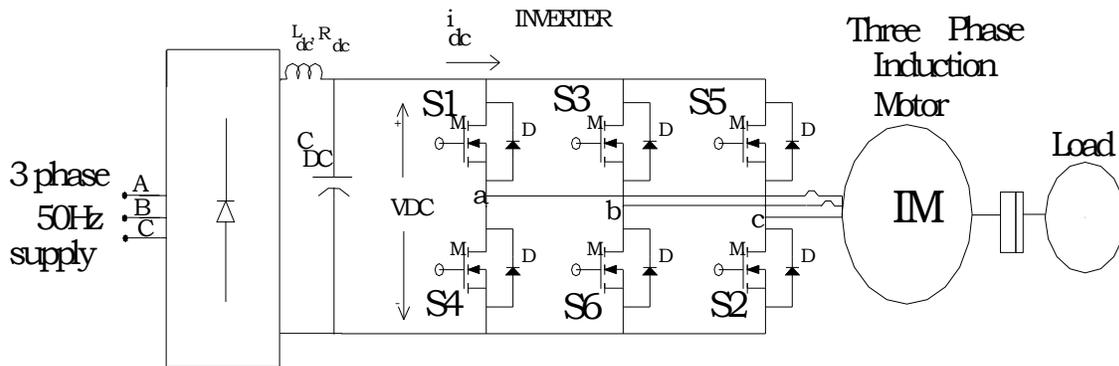
dissipation increases. Coupled with the fact that surface areas have decreased, heat poses a major threat to the stability of the circuit itself.

3. Layout. Laying out the circuit components is task common to all branches of electronics. What's so special in our case is that there are many possible ways to do this; there can be multiple layers of different materials on the same silicon, there can be different arrangements of the smaller parts for the same component and so on.

This project demonstrates the use of a VLSI kit for the gating of three phase inverter in different modes.

ADVANTAGES OVER ANALOG SYSTEMS

- No temperature drift of tuning parameters
- Component count dramatically reduced resulting in higher Mean Time Between Failure (MTBF)
- Enclosure density and size dramatically reduced.
- Fewer wiring connections.
- All tuning and adjustments are made in software thus hardware adjustments which are error prone and not easily reversible are not required



VLSI design Based Three phase power converter Gating

A three phase converter is a common unit found in industrial drives meant for control of motors. Convention gating circuit meant for gating of converters has the following problems.

2. Circuit Delays. Large complicated circuits running at very high frequencies have one big problem to tackle - the problem of delays in propagation of signals through gates and wires ... even for areas a few micrometers across! The operation speed is so large that as the delays add up, they can actually become comparable to the clock speeds.
3. Power. Another effect of high operation frequencies is increased consumption of power. This has two-fold effect - devices consume batteries faster, and heat dissipation increases. Coupled with the fact that surface areas have decreased, heat poses a major threat to the stability of the circuit itself.
4. Layout. Laying out the circuit components is task common to all branches of electronics. What's so special in our case is that there are many possible ways to do this; there can be multiple layers of different materials on the same



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

silicon, there can be different arrangements of the smaller parts for the same component and so on.

ADVANTAGES OVER ANALOG SYSTEMS

- No temperature drift of tuning parameters
- Component count dramatically reduced resulting in higher Mean Time Between Failure (MTBF)
- Enclosure density and size dramatically reduced.
- Fewer wiring connections.
- All tuning and adjustments are made in software thus hardware adjustments which are error prone and not easily reversible are not required

VHDL IMPLIMENTATION OF LZW COMPRESSION ALGORITHM

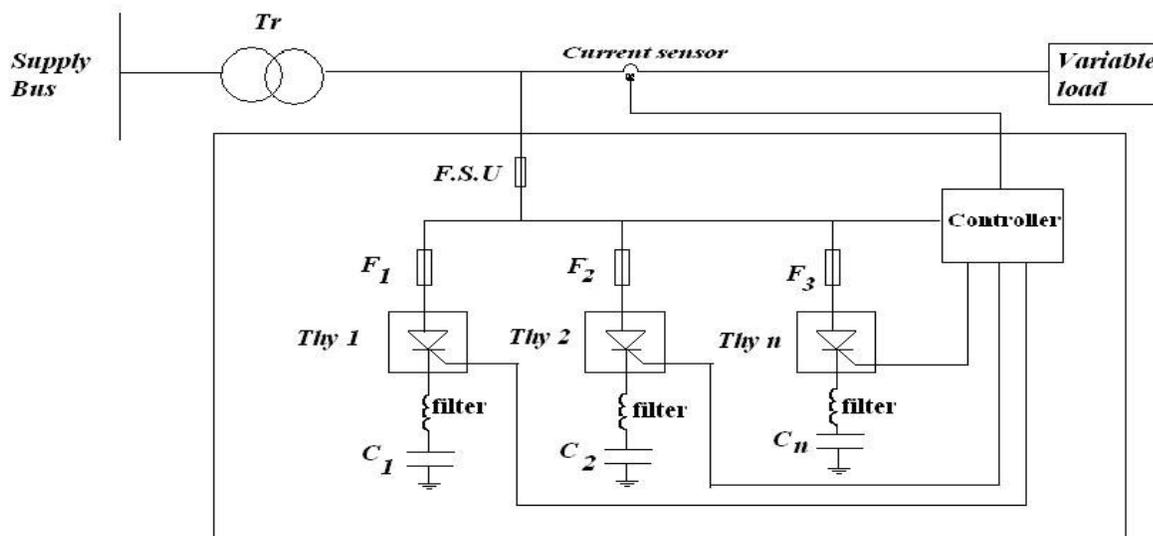
Abstract

The adaptive Lempel-Ziv-Welch general-purpose algorithm and its implementation suitable for packet radio telephone transmission, and archival storage. While the statistical variable-length Huffman technique compresses text by 20%, the LZW technique can compress data (text, numeric, mixed, and bit-mapped images) by 40 to 60%.

The adaptive LZW algorithm has very simple logic, leading to inexpensive and fast implementations. Good LZW implementations use 9- to 16-bit codes, handling most applications. A 12-bit code is suitable for medium-size files. Efficiency improves with larger codes. A tight coding of the algorithm can compress 75 Kbytes in a second on a 1-MIPS machine.

This project is implemented using VHDL & simulation results are verified. It encourages concurrent development in the area of data compression. The further enhancement of this project is to achieve more percentage of compression with less hardware.

THYRISTOR SWITCHED REACTIVE POWER COMPENSATION



Block Diagram of Thyristor switched RPC System.

In addition to not being able to achieve the desired power factor it is also possible that the use of fixed compensation can also result in leading power factor under certain load conditions. This is also unhealthy for the installation as it can result in over voltage, saturation of transformers, etc. It is therefore necessary to automatically



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

vary without manual intervention, the compensation to suit the load requirements. Some loads (such as welding equipments, injection moulding equipment, starting of large induction motors, traction loads) which demand, under certain operating conditions, large amount of reactive power for very short duration of time. Thyristor switched automatic power factor correction system (Fig) is used in this application which have a response time in milliseconds. In this system, it is possible to switch in capacitors such that the inrush transient currents are totally eliminated. In addition the capacitors can be switched repetitively intent any limits since, there is no need for allowing discharge of the capacitor before it is switched in.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

SCADA FOR POWER SYSTEM AUTOMATION

ABSTRACT:

Automation of power distribution system has increasingly been adopted by power utilities worldwide in recent years. As part of its efforts to provide a more reliable supply to the customer and to enhance operational efficiency. The automation of the power system can be achieved by SCADA. It is a boon to the automation concept of dynamic technology. SCADA refers to “SUPERVISORY CONTROL & DATA ACQUISITION”.

This paper presents the approach adopted in implementing the SCADA system and the benefits accrued through incorporating system. Electric power distribution system is an important part of electric power system in delivery of electricity to consumers. Electric power utilities worldwide are increasingly adopting the computer aided monitoring, control and management of electric power distribution system to provide better service to electric consumers. Therefore research and development activities worldwide are being carried out to automate the electric power distribution system utilizing recent advancement in the area of information technology and data communication system. This paper reports the present and past status of the research and development activities in the area of electric power distribution automation both in developed as well as in developing countries. The information given in this paper is useful to electric power distribution utilities and academicians involved in research and development activities in the area of power distribution automation. Even public sectors like TNEB has installed SCADA for monitor & control ninety-five substations in the CHENNAI metro for this, We are trying to reproduce SCADA in a less paid form. This project explains the use of 8085 as RTU in power system automation. Our ultimate aim is to reduce the cost but more user friendlier environment. This may be a small step for us, we hope this may be a giant leap for the power sector. A computer based



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

SCADA system equipped with automated generation control function is proposed. To supervise and control the generation and transmission system as well as to cater for their increasing sophistication in system operation and coordination. In order to serve such a high number of RTU by a control centre and to avoid any communication bottleneck at the master station, a distributed system approach is suggested. Here two sets of dual computer system were installed at two geographically separated locations.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

RFID based library management system

ABSTRACT

Wireless sensor networks have the potential to provide unprecedented remote monitoring capabilities that can benefit applications such as industrial control, environmental monitoring, and defense. Radio Frequency Identification (RFID) is one of the most exciting technologies that revolutionize the working practices by increasing efficiencies, and improving profitability. It is often presented as a replacement for today's barcodes used in library books, but the technology has much greater possibilities, such as individual serial numbers for each item, and the possibility to read these numbers at a distance of several metres. They are simpler to deploy than wired solutions and these networks will enable improved understanding of processes and environments through continual monitoring of a larger set of parameters. In this project the evolution of wireless sensor networks will be presented, using RFID techniques with examples of implementations in library management systems in college.

In this project the issue and receiving of books are recorded by the use of RFID tags. These cards were based on the DuoProx II, made by HID®, one of the bigger manufactures of proximity security cards. It features both a magnetic strip and an RFID tag, which uses a carrier frequency of 125 Hz and modulates the signal by using Frequency-Shift-Keying (FSK).



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Remote substation monitoring and control

Automation of power distribution system has increasingly been adopted by power utilities worldwide in recent years. As part of its efforts to provide a more reliable supply to the customer and to enhance operational efficiency here we have developed substation automation. The automation of the entire power system can be achieved by a proper monitoring and control. Monitoring refers to monitoring of voltage in the feeders, transformer or P.Ts found in a substation whereas control refer to actions such as feeder reconfiguration, fault dripping and other relay control actions.

This project presents the approach adopted in implementing the Substation automation system and the benefits accrued through incorporating system. Electric power substation is an important part of electric power system in delivery of electricity to consumers. The project hardware contains three modules they are a remote voltage monitoring system, remote relay control and power system transient analyzer. The voltage monitoring is used to remotely display the bus bar voltage. This module can also be used for display of current and temperature of transformers by the addition of suitable transducer.

The remote relay control is used to remotely control 8 relays using RF waves. The range of these systems depends on the number of power amplifiers used and the power supplied to the transmitters. This module can be used for relay control in locations where human presence is not possible.

The transients occurring in power system can be observed in matlab using a C.T, this is demonstrated in the third module



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Remote device control using Radio Frequency

The project compares the communication of control signals using radio frequency and Infra Red Rays. The STR is ideal for short-range remote control applications where cost is a primary concern. The receiver module requires no external RF components except for the antenna. It generates virtually no emissions, making FCC and ETSI approvals easy. The super-regenerative design exhibits exceptional sensitivity at a very low cost. A SAW filter can be added to the antenna input to improve selectivity for applications that require robust performance. The manufacturing-friendly SIP style package and low-cost make the STR suitable for high volume applications.

The STR-315 uses a super-regenerative AM detector to demodulate the incoming AM carrier. A super-regenerative detector is a gain stage with positive feedback greater than unity so that it oscillates.

The received signals can be decoded using a standard ST-12 decoder chip. A 89C51 micro controller from atmel is used to generate the control signals at the transmitter side.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

PLC BASED PROTECTION AND INTERLOCKS

SYNOPSIS

A programmable logic controller (PLC) is an industrially hardened computer based unit that performs discrete or continuous control function in a variety of processing plant and factory environment. PLC consists of CPU, input device, output device and Programming device. PLC replaces relays, timers, counters and sequencers.

Our project concerns with PLC based protection and interlocks for

1. Boiler feed pumps.
2. Mill and feeder interlocks.
3. Slag conveyor monitoring system.
4. Debris filter.

In boiler feed pump, the relays are used for starting and tripping of feed pump with satisfying the specified condition. Even when one condition is found to be failed it leads to the failure of the whole system. But we can overcome these limitations when the PLC is used.

Similarly in mill and feeder interlocks dampers are generally used. To overcome the dampers PLC is used. Also for the same purpose PLC is used in slag conveyor monitoring systems.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Ozone Generation From corona discharge

Abstract

The phenomenon of violet glow, hissing noise and the production of ozone gas in the overhead transmission line known as corona is used in our project for the production of ozone gas. The gas produce out of the device can be used for the treatments of drinking water disinfections and air purification.

The device has a discharge tube in which high electric field is applied so as to breakdown the ozone present in the air. This phenomenon occurs at field strength of about 25 KV at normal room temperature. This unit employs a high voltage of 30 KV peak at a frequency of 15 KHZ to 20 KHZ. Such a high Voltage is developed by means of Line output transformer or Fly-Back Transformer.

The amount of Ozone output can also be controlled indirectly by varying the A.C input voltage by using a tap-changing transformer. Ozonation is 3125 times more powerful than chlorination. The unit can treat 5 liters of impure water in about 2 minutes. The nascent oxygen makes ozone a very powerful disinfecting agent. Ozone destroys all bacteria by colliding.

This project is also provided with simple protection circuit, which prevents the POWER COMPONENT from being damaged, by High voltage spikes and low voltage surges. The unit can be continuously operated for four to six without much heating of the power electronic devices.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Ozone Generation From corona

Abstract

The phenomenon of violet glow, hissing noise and the production of ozone gas in the overhead transmission line known as corona is used in our project for the production of ozone gas. The gas produce out of the device can be used for the treatments of drinking water disinfections and air purification.

The device has a discharge tube in which high electric field is applied so as to breakdown the ozone present in the air. This phenomenon occurs at field strength of about 25 KV at normal room temperature. This unit employs a high voltage of 30 KV peak at a frequency of 15 KHZ to 20 KHZ. Such a high Voltage is developed by means of Line output transformer or Fly-Back Transformer.

The amount of Ozone output can also be controlled indirectly by varying the A.C input voltage by using a tap-changing transformer. Ozonation is 3125 times more powerful than chlorination. The unit can treat 5 liters of impure water in about 2 minutes. The nascent oxygen makes ozone a very powerful disinfecting agent. Ozone destroys all bacteria by cell licing.

This project is also provided with simple protection circuit, which prevents the MOSFET from being damaged, by High voltage spikes and low voltage surges. The unit can be continuously operated for four to six without much heating of the power electronic devices.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

MICROCONTROLLER BASED SOLAR PV SYSTEM UPS

Abstract

Uninterruptible Power Supply (UPS) systems are being popular and presently used in commercial, industrial and residential applications. Presently the UPS system has two major classifications, one is on line UPS and another one is off line UPS. In both the types the battery system inside the UPS is charged by the mains AC Supply. A by-pass mode of operation is also incorporated in the UPS during normal supply. This paper presents a novel technology to charge the battery using Renewable Energy Systems (RES) particularly of Solar PV power. Battery charging can mostly be done by the solar power whereas if the PV power is inadequate, then the UPS system i.e. the battery is discarded from the PV panel and automatically connected to EB mains. The inverter in the UPS system can also replaced by controlled Voltage Source Inverter (VSI). A prototype of 1-Ph, 1-kVA UPS system has been examined for the above work. Controlled inverter has been realized by a dedicated PIC 16F877 controller. The output of the inverter has been maintained as 230 V +/- 2% by using PWM technique, which is incorporated in the PIC controller



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

MICROCONTROLLER based control panel for Industrial machines

The project demonstrates the following motor operations using MICROCONTROLLER

1. Speed control
 - A.C motors
 - D.C motor
2. Start delta starter
3. Fail safe protection systems
4. Two phase operation of three phase motor.

Unlike general-purpose computers, the MICROCONTROLLER is designed for multiple inputs and output arrangements, extended temperature ranges, immunity to electrical noise, and resistance to vibration and impact. Programs to control machine operation are typically stored in battery-backed or [non-volatile](#) memory. A MICROCONTROLLER is an example of a [real time](#) system since output results must be produced in response to input conditions within a bounded time, otherwise unintended operation will result.

The main difference from other computers is that MICROCONTROLLERS are armored for severe condition (dust, moisture, heat, cold, etc) and have the facility for extensive [input/output](#) (I/O) arrangements. These connect the MICROCONTROLLER to [sensors](#) and [actuators](#). MICROCONTROLLERS read limit [switches](#), analog process variables (such as temperature and pressure), and the positions of complex positioning systems. Some even use [machine vision](#). On the actuator side, MICROCONTROLLERS operate [electric motors](#), [pneumatic](#) or [hydraulic](#) cylinders, magnetic [relays](#) or [solenoids](#), or analog outputs. The input/output arrangements may be built into a simple MICROCONTROLLER, or the MICROCONTROLLER may have external I/O modules attached to a computer network that plugs into the MICROCONTROLLER.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

MICROCONTROLLERS were invented as replacements for automated systems that would use hundreds or thousands of ICS timers, and [drum sequencers](#). Often, a single MICROCONTROLLER can be programmed to replace thousands of ICs. Programmable controllers were initially adopted by the automotive manufacturing industry, where software revision replaced the re-wiring of hard-wired control panels when production models changed.

General features

- 1) Allows for the output to be a value other than 100% or 0%.
- 2) Speed can be controlled without oscillations around the set point.

Historically MICROCONTROLLERS were usually configured with only a few analog control loops; where processes required hundreds or thousands of loops, a [distributed control system](#) (DCS) would instead be used. However, as MICROCONTROLLERS have become more powerful, the boundary between DCS and MICROCONTROLLER applications has become less clear-cut.

Disadvantages of a classic Motor control panels

- Too much work required in connecting wires.
- Difficulty with changes or replacements.
- Difficulty in finding errors; requiring skillful work force.
- When a problem occurs, hold-up time is indefinite, usually long.

Advantages of control panel using MICROCONTROLLER controller

1. Compared to a conventional process control system, number of wires needed for connections is reduced by 80%
2. Consumption is greatly reduced because a MICROCONTROLLER consumes less than a bunch of ICS
3. Diagnostic functions of a MICROCONTROLLER controller allow



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

for fast and easy error detection.

4. Change in operating sequence or application of a MICROCONTROLLER controller to a different operating process can easily be accomplished by replacing a program through a console or using a PC software (not requiring changes in wiring, unless addition of some input or output device is required).

5. Needs fewer spare parts

6. It is much cheaper compared to a conventional system, especially in cases where a large number of I/O instruments are needed and when operational functions are complex.

7. Reliability of a MICROCONTROLLER is greater than that of an analog circuit or a timer. Latching and Reporting Alarms



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

MICRO CONTROLLER BASED OBJECT TRACKING SYSTEM

ABSTRACT

Micro controllers have found various applications in the present scenario and are used in most of the electronics based equipments. They have become a user friendly component and their programming part is being made easy through the wide spread knowledge about them. We have used up the additional advantages of the micro controller over the micro processor in our project. Our project microcontroller based object tracking system is to identify the location of an object in an institution with a huge campus area. Whenever we take up the case of an institution with a huge campus area, it gets hard to find the location of an object we are searching for. Especially when the object we are looking for is moving, we need to keep track of the object's movement to find it. Our project gives an effective solution to this problem. The basic idea of our project is to set up receivers at various locations and hand down transmitters to each object. This entire process of generating a unique code, transmitting it, receiving it and decoding it can be achieved by categorizing the project into three modules namely the Transmitter section, the Receiver section and the Central module consisting of the Micro controller. The basic operating principle of the project can be implemented using these sections.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

INVESTIGATION OF ECG SIGNAL USING DSP PROCESSOR AND WAVELETS

The analysis of the ECG has been widely used for diagnosing many cardiac diseases. The ECG is a graphic record of the direction and magnitude of the electrical activity that is generated by depolarization and repolarization of the atria and ventricles. One cardiac cycle in an ECG signal consists of the P-QRS-T waves. Most of the clinically useful information in the ECG is found in the intervals and amplitudes defined by its features. The development of accurate and quick methods for automatic ECG feature extraction is of major importance, especially for the analysis of long recordings (Holters and ambulatory systems). In fact, beat detection is necessary to determine the heart rate, and several related arrhythmias such as Tachycardia, Bradycardia and Heart Rate Variation; it is also necessary for further processing of the signal in order to detect abnormal beats. The ECG feature extraction system provides fundamental features (amplitudes and intervals) to be used in subsequent automatic analysis.

The large number of known wavelet families and functions provides a rich space in which to search for a wavelet which will very efficiently represent a signal of interest in a large variety of applications. Wavelet families include Biorthogonal, Coiflet, Harr, Symmlet, Daubechies wavelets, etc. There is no absolute way to choose a certain wavelet. The choice of the wavelet function depends on the application. The Haar wavelet algorithm has the advantage of being simple to compute and easy to understand. The Daubechies algorithm is conceptually more complex and has a slightly higher computational overhead. But, the Daubechies algorithm picks up detail that is missed by the Haar wavelet algorithm. Even if a signal is not well represented by one member of the Db family, it may still be efficiently represented by another. Selecting a wavelet function which closely matches the signal to be processed is of utmost importance in wavelet applications.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

In particular, the influence of the selection of wavelet function and the choice of decomposition level on efficiency of denoising process were considered and whole procedures of noise reduction is done in TMS320CXX processor in MatLab environment. The Fast Wavelet Transform was use. The advantage of used denoising method is noise level decreasing in ECG signals, in which noise reduction by averaging has limited application, i.e. in case of arrhythmia, or in presence of extrasystols.

Noise reduction in ECG signals is one of the main problems, which appear during analysis of electrical activity of the heart. The most troublesome noise sources contain frequency components within ECG spectrum, i.e.: electrical activity of muscles (EMG), and instability of electrode-skin contact. Such noises are difficult to remove using typical filtering procedures. Efficient analytical tool which allows to increase signal to noise ratio is a technique of averaging of cardiac cycles. Effectiveness of this method strictly depends on stable sinus rhythm. That requirement is however not fulfilled in case of arrhythmia, or the presence of many extra systoles. In such signals noise reduction is only possible with using, more advanced signal processing method, as wavelet denoising technique.

The aim of this study is to investigate the application of DSP processor for real time denoising in high resolution ECG signals. In this work, we are developing and evaluated an electrocardiogram (ECG) feature extraction system based on the multi-resolution wavelet transform. In this work, we will develop and evaluated an electrocardiogram (ECG) feature extraction system based on the multi-resolution wavelet transform.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

INVESTIGATION OF ECG SIGNAL USING DSP PROCESSOR AND WAVELETS

The analysis of the ECG has been widely used for diagnosing many cardiac diseases. The ECG is a graphic record of the direction and magnitude of the electrical activity that is generated by depolarization and repolarization of the atria and ventricles. One cardiac cycle in an ECG signal consists of the P-QRS-T waves. Most of the clinically useful information in the ECG is found in the intervals and amplitudes defined by its features. The development of accurate and quick methods for automatic ECG feature extraction is of major importance, especially for the analysis of long recordings (Holters and ambulatory systems). In fact, beat detection is necessary to determine the heart rate, and several related arrhythmias such as Tachycardia, Bradycardia and Heart Rate Variation; it is also necessary for further processing of the signal in order to detect abnormal beats. The ECG feature extraction system provides fundamental features (amplitudes and intervals) to be used in subsequent automatic analysis.

The large number of known wavelet families and functions provides a rich space in which to search for a wavelet which will very efficiently represent a signal of interest in a large variety of applications. Wavelet families include Biorthogonal, Coiflet, Harr, Symmlet, Daubechies wavelets, etc. There is no absolute way to choose a certain wavelet. The choice of the wavelet function depends on the application. The Haar wavelet algorithm has the advantage of being simple to compute and easy to understand. The Daubechies algorithm is conceptually more complex and has a slightly higher computational overhead. But, the Daubechies algorithm picks up detail that is missed by the Haar wavelet algorithm. Even if a signal is not well represented by one member of the Db family, it may still be efficiently represented by another. Selecting a wavelet function which closely matches the signal to be processed is of utmost importance in wavelet applications.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

In particular, the influence of the selection of wavelet function and the choice of decomposition level on efficiency of denoising process were considered and whole procedures of noise reduction is done in TMS320CXX processor in MatLab environment. The Fast Wavelet Transform was used. The advantage of used denoising method is noise level decreasing in ECG signals, in which noise reduction by averaging has limited application, i.e. in case of arrhythmia, or in presence of extrasystols.

Noise reduction in ECG signals is one of the main problems, which appear during analysis of electrical activity of the heart. The most troublesome noise sources contain frequency components within ECG spectrum, i.e.: electrical activity of muscles (EMG), and instability of electrode-skin contact. Such noises are difficult to remove using typical filtering procedures. Efficient analytical tool which allows to increase signal to noise ratio is a technique of averaging of cardiac cycles. Effectiveness of this method strictly depends on stable sinus rhythm. That requirement is however not fulfilled in case of arrhythmia, or the presence of many extra systoles. In such signals noise reduction is only possible with using, more advanced signal processing method, as wavelet denoising technique.

The aim of this study is to investigate the application of DSP processor for real time denoising in high resolution ECG signals. In this work, we are developing and evaluated an electrocardiogram (ECG) feature extraction system based on the multi-resolution wavelet transform. In this work, we will develop and evaluated an electrocardiogram (ECG) feature extraction system based on the multi-resolution wavelet transform.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

INDUSTRIAL AUTOMATION THROUGH SMS

This project is aimed at developing control of equipments connected to a PC through SMS. Usually switch control is used to control the electrical equipments. It is a manual task and a person has to go to the distant place in order to control the equipment when switch control is located far from easy reach. This inconvenience can be minimized by using wireless communication developed in our project. This system has been developed using a PC & a mobile. The former acts as a command initiator and the latter acts as a command receiver. Both are capable of communicating serially. The PC is equipped with buffers to the relays through parallel port. The operation to be performed is sent by mobile as SMS to PC. The PC on receiving the SMS, controls the equipments connected to it appropriately.

Software has been developed in C to TX/RX serial data. Serial port software routines are used to configure and communicate. ON/OFF controls of relays are done by parallel port software routines. Specific software commands are used to control each equipment



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

GSM based Highway Road Traffic Monitoring System.

This project monitors and stores the data about number vehicles moving on the highway roads. This project uses infrared/laser sensor system to count the number of vehicles passing in both the directions. The vehicle count is logged by the microcontroller. This vehicles information is sent to the user over GSM modem. The information can be sent to the user periodically or can be sent on demand by sending a missed call or SMS.

ASL GeoConnect is a GUI based application software, installed at the Desktop of the Control Station. Using this, the operator of a fleet can query any vehicle fitted with GeoPoint 2407 Unit and obtain its position in real time, or send/receive text messages to/from the Unit. Alternatively, vehicles can be configured to report their position to Control Station at set intervals and automatically update a database at the Control Station. This data can be read from the database and the position displayed on a digital map.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

GPS & GSM Based Realtime Vehicle Tracking System.

An Automatic Vehicle Tracking System (VTS) operates in conjunction with a Control Station. It helps to track and provide real time location information on the vehicle in which the Unit is installed. The data exchange with the Unit takes place using an integrated GSM communication. The Unit features an advanced electronic design with embedded software equipping it with several user-friendly operational features.

This system locates the Vehicle on the earth by the use of GPS and sends the co-ordinates (Longitude & Latitude), Time and Vehicle speed to the owner of the vehicle using GSM Modem. (GPS+GSM+Microcontroller)



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

GPS & GSM Based Car Security System.

Easy to find the stolen Car. Global Positioning System (GPS) has been used in various commercial applications including transportation, navigation and vehicle position tracking, which when coupled with GSM mobile phone technology, the technology can help locate stolen vehicle and retrieval process.(GPS+GSM+Microcontroller)



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

GSM Based Irrigation Control System

This project is to control the electrical Irrigation water pump remotely by the use of SMS messages. This also can send the sms alerts back to user about the electrical power status change.

Embedded Energy Saver

Energy conservation reduces the energy consumption and energy demand per capita, and thus offsets the growth in energy supply needed to keep up with population growth. This reduces the rise in energy costs, and can reduce the need for new power plants, and energy imports. The reduced energy demand can provide more flexibility in choosing the most preferred methods of energy production. This project focuses on Energy conservation by using sensors to sense person coming in & going out of the room or a specific area. Sensors are also used to detect the ambient light & accordingly turn ON bulbs at the required intensity. The circuit consists of Micro Controller 8951/8952, IR sensor for detecting people entering or leaving the room, LDR for detecting the ambient light, ADC for converting the LDR output into digital value & giving to the controller & a TRIAC for Turning ON/OFF & changing the bulbs intensity.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Automatic Meter Reading

Automatic meter reading, or AMR, is the technology of automatically collecting data from water meter or energy metering devices (water, gas, and electric) and transferring that data to a central database for billing and/or analyzing. This saves employee trips, and in the case of estimates, billing can be based on actual consumption rather than on an estimate based on previous consumption, giving customers better control of their use of electric energy, gas usage, or water consumption. In this all meters are connected serially to a central computer where the meter reading is received & saved in its database. Moreover if the bill is not paid in time the power can be cut off from the central computer & upon receiving the bill the power can be restored within a minute. The circuit consists of a current transformer for sensing the current, whose o/p is given to ADC the digital data from the ADC is read by the controller, the controller then calculates the current consumed & accordingly increases the meter reading. This is displayed on LCD. The controller is also connected to the central computer using MAX 232 & can switch ON & OFF the power of the house using a relay. An EEPROM is used to save the last meter reading in case of power failure.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Patient Monitoring System

It is required to monitor the patient's temperature, heartbeat & if the temperature increases above certain level injection has to be given. Our system does the same a sensor is used to monitor the patient's temperature; if the temperature goes above a certain level a predefined amount of medicine is given. And an indication is given to inform the doctor that injection has been given. A microcontroller is used to get the patients temperature & display it on LCD. The amount of medicine to be injected is entered through the keypad & also displayed on LCD.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

RAILWAY COACH AUTOMATION

The temperature of an AC coach is maintained. During summer the Cold air is blown in to decrease the temperature of the coach & during the winter hot air is blown to increase the temperature to maintain the Coach Temperature within the specified limit. Two motors are used for this purpose Motor 1 is used to blow the cold air & Motor 2 is used to Blow the hot air inside the coach. The temperature is sensed using LM35 as a temperature sensor whose output is given to ADC & then to the Micro Controller. LCD is used to display the current temperature as well as the temperature set point & the Motor Status. A compressor is also used to circulate the air within the compartment. We will monitor the current used by the compressor using a Current Transformer if the current is above or below a specific limit the compressor can be said to be faulty & need replacement. This is also indicated on the LCD.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

DYNAMIC TRAFFIC CONTROL & MANAGEMENT

One of the most pressing problems faced by people in large cities & towns is the congestions of roads leading to those seemingly inadvertent traffic jams. Most of the signals are pre timed i.e. the signal duration is fixed so even if there is less traffic on one of the roads the signal duration remains the same. Sensors are used to determine the traffic on a road & accordingly change the duration of the signal. Moreover all the signals are connected to a central computer where a database is maintained of traffic at different time during the day which can be helpful in traffic analysis & city management. Three Sensors are placed on each road of a crossroad, the output of the sensors are given to microcontroller (8951/8952), the controller then calculates the timing of each signal according to the traffic on each road. This data is also sent to the PC using MAX232, where a database is maintained.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

PICK AND PLACE ROBOT

Automatic Robotic arms are used in manufacturing industries at places where it is hazardous for humans to work or where very fast, precise & repetitive work needs to be done. Three motors will be used for picking up (pickup point) & placing (drop point) the object. IR sensors will be used to detect if an object has arrived at the pickup point, then the robotic arm will move & pick up the object & move towards the drop point. Another IR sensor is used to check if any object is there at the drop point if so an alarm will be sounded until the object at drop point is removed. As soon as the object is removed, the object in the robotic arm is placed & the arm goes back to initial position. 8951/8952 microcontroller is used over here which checks the sensor input & controls the motors. The circuit consist of three motors & their corresponding drivers. Two IR transmitters & receivers for detecting the objects at pickup & drop point.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Smart Power Grid

The electrical grid is an interconnected system of power plants, power lines, wires, etc. moving and delivering electricity from power plants to end users. Also referred to as a transmission and distribution (T&D) network, today's grid faces challenges to keep pace with the modern digital economy and information age, which require higher load demands, uninterruptible power supplies, and other high-quality, high-value services. Micro Controller is placed at intervals to detect the power usage as well as the power consumption at that point. All these controllers are connected together & information like voltage & current consumed is then sent serially to a central computer. If there is a problem in one area then that area can be cut off temporarily from the central computer. Moreover parameters such as transmission power loss, power consumption during different time of the day & power theft can also be detected. Each sensing unit will consist of a current transformer for sensing the current, whose o/p is given to ADC the digital data from the ADC is read by the controller, the controller(8951/8952) is connected to the central computer using DS75176 which is used for multipoint communication. The sensing unit also contains relays which are used to divert power or cut off power in specific area.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

BLACK BOX FOR VEHICLE

Lot of the time drivers drive above limit or over heat the engines thus decreasing the vehicles performance considerable. Moreover accidents occur due to over speeding & are on rise especially amongst the youngsters so parents need to keep a watch on them. Black box for vehicle does the same it checks if the vehicle RPM is above limit & if so logs the RPM along with the time at which the speed limit has been crossed & the number of time the vehicle was above the speed limit. Moreover it checks the engine temperature & if the temperature is above limit a buzzer is sounded. The device is then connected to the PC where the speed logs can be seen.

Microcontroller (8951/8952) is the heart of the project, the controller gets the pulses from the sensor & calculates the vehicle's RPM. LM35 is used as temperature sensor, the voltage o/p of the sensor is given to ADC, and the controller gets the reading from the ADC. An EEPROM is used to store the logs as well as the RPM & temperature set point. A RTC is used to keep the time so that the exact time of over speeding can also be logged. MAX232 is used to communicate with the PC.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

AQUARIUM AUTOMATION

Fishes are very sensitive to changes in temperature & surround lighting. In this project we maintain the temperature of the aquarium, the time at which the lights should be turned ON/OFF & the duration of oxygen motor. For this three relays are required one each for heater (temperature control), light & the Oxygen Motor. LM 35 is used as the temperature sensor for sensing the waters temperature, ADC 0808 is used to convert the LM 35's output into digital value for the controller. RTC (Real Time Clock) is used for real time according to which the Bulb & the Oxygen motor is turned ON/OFF. A LCD is used to display the temperature as well as the time for turning ON & OFF the lights & the blower motor. The timing can be changed using a keypad & is then stored in the ROM area of the RTC. A battery backup is provided so even in case of power failure the real time is not corrupted.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Automated Pet Feeder

As pet lovers, we understand that the responsibilities of life sometimes inhibit pet owners from properly caring for their pets. Pet care should be fun, not burdensome, and so our goal with this project was to assist owners with pet care by providing a system that automates diet management.

A controller is used to activate a mechanical assembly using which a fixed amount of food is dispensed from the feeder unit after a specific duration the amount of food being dispensed as well as the time after which the food has to be dispensed can be entered using a keypad. A memory is used to save this setting.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

INTELLIGENT STREET LIGHTING SYSTEM

Energy conservation reduces the energy consumption and energy demand per capita, and thus offsets the growth in energy supply needed to keep up with population growth. This reduces the rise in energy costs, and can reduce the need for new power plants, and energy imports. The reduced energy demand can provide more flexibility in choosing the most preferred methods of energy production.

In any city “STREET LIGHT” is one of the major power consuming factors. Most of the time we see street lights are ON even after sunrise thus wasting lot of energy. Over here we are avoiding the problem by having an automatic system which turns ON & OFF the street lights at given time or when the ambient light falls below a specific intensity. All streetlights are connected to a central computer from where the time at which the lights are to be turned ON/OFF can be set. An LDR is used to check if the lights have turned ON or not. This status is then sent to the central computer. Thus even the blown out lights can be detected. Each controller has an LDR which is used to detect the ambient light. We can operate the system in two modes the MANUAL MODE & AUTO MODE. In MANUAL MODE the lights are TURNED ON/OFF from the central computer. In AUTO mode if the ambient light is below a specific value the lights are turned ON.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

GREEN HOUSE AUTOMATION

Greenhouses are often used for growing flowers, vegetables & fruits plants. The closed environment of a greenhouse has its own unique requirements, compared with outdoor production. Pests and diseases, and extremes of heat and humidity, have to be controlled, and irrigation is necessary to provide water. Significant inputs of heat and light may be required, particularly with winter production of warm-weather vegetable. A micro controller will be used to control the basic parameters of the green house. An LDR will be used to measure the light intensity, Temperature sensor will be used to get the temperature & timely irrigation will be provided by turning ON the Motors at specific intervals. LCD will display the current temperature & light intensity. EEPROM will be used to save the temperature set point, the light intensity values & the time at which Motor has to be turned ON. RTC (Real Time Clock) will be use to get the real time & according to time the controller will turn ON & OFF the Motor. The setting for the temperature, light & Motor ON/OFF time is done through PC.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

MULTI CHANNEL LOGIC ANALYZER

A logic analyzer is an electronic instrument that displays signals in a digital circuit that are too fast to be observed and presents it to a user so that the user can more easily check correct operation of the digital system. They are typically used for capturing data in systems that have too many channels to be examined with an oscilloscope. Isolation will be provided between the controller & the input signal in So that the controller will not be damaged due to any high voltage spike. The logic signals at different channels will be sent serially to the PC using MAX232. VB side software on the PC will then display the logic levels on the screen. This data can be stored in the PC & can be seen any time.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

SCADA APPLICATION

SCADA is the abbreviation for Supervisory Control And Data Acquisition. The term SCADA usually refers to centralized systems which monitor and control entire sites, or complexes of systems spread out over large areas (on the scale of kilometres or miles). Most site control is performed automatically by remote terminal units. A PLC may control the temperature of a furnace through part of an industrial process, but the SCADA system may allow operators to change the set points for Temperature, and enable alarm conditions, such as loss of flow and high temperature, to be displayed and recorded.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

DCS APPLICATION

A distributed control system (DCS) refers to a control system usually of a manufacturing system, process or any kind of dynamic system, in which the controller elements are not central in location (like the SCADA) but are distributed throughout the system with each component sub-system controlled by one or more controllers. The entire systems of controllers are connected by networks for communication and monitoring. A DCS typically uses custom designed processors as controllers and uses both proprietary interconnections and protocols for communication. Input & output modules form component parts of the DCS. The processor receives information from input modules and sends information to output modules. Elements of a distributed control system may directly connect to physical equipment such as switches, pumps and valves.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Energy conservation in industrial A.C drives

ABSTRACT

The induction motors can be considered the larger users of electrical energy. They are used both in industrial and commercial sectors in a wide range of applications, such as: fans, compressors, pumps, conveyor, winders, mills, transports, elevators, home appliances and office equipments. In India, the electric motors used in the industrial field consume typically the 60 to 70% of the total adsorbed electrical energy. In the commercial sector, this percentage is up to 35%.

With reference to industrial sector, a general purpose electrical motor consumes about an annual quantity of electrical energy equal to 5 times its purchase costs and the motor live can he evaluated around 10 to 12 years. On the base of these considerations, it is possible to obtain consistent energy saving if higher efficiency motors are used in the final applications.

World-wide, there exist several standards for testing electric machinery. For induction motors, the four most important are:

IEEE Standard 112-1996

IEC 34-2 and IEC 34-2A

JEC 37

IS 325

Several national standards are harmonized with regard to one of the three general standards above. The NEMA MG-1- 1993 standard and the Canadian standard C390 correspond to the IEEE standard, while in most of the European countries; the standards are harmonized to IEC 34-2. JEC stands for the Japanese standard. The efficiency value obtained from the considered testing standards can differ by several percent, as will be shown in the measurement results. Moreover, one standard can contain different methods that do not necessarily lead to one firmly determined value.

In this project, international standards are used to evaluate the efficiency of 3.7 KW, 4 pole three-phase induction motor and a logic based energy optimizer is developed using the numerical values obtained from the above standards.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Embedded based water purification system

Abstract

The phenomenon of violet glow, hissing noise and the production of ozone gas in the overhead transmission line known as corona is used in our project for the production of ozone gas. The gas produce out of the device can be used for the treatments of drinking water disinfections and air purification.

The device has a discharge tube in which high electric field is applied so as to breakdown the ozone present in the air. This phenomenon occurs at field strength of about 25 KV at normal room temperature. This unit employs a high voltage of 30 KV peak at a frequency of 15 KHZ to 20 KHZ. Such a high Voltage is developed by means of Line output transformer or Fly-Back Transformer driven by a embedded controller.

The amount of Ozone output can also be controlled indirectly by varying the D.C input voltage by using a atmel 8 bit microcontrollers. Ozonation is 3125 times more powerful than chlorination. The unit can treat 5 liters of impure water in about 2 minutes. The nascent oxygen makes ozone a very powerful disinfecting agent. Ozone destroys all bacteria by cell licing.

This project is also provided with simple embedded protection circuit, using 18F877 microcontroller which prevents the POWER COMPONENT from being damaged, by High voltage spikes and low voltage surges. The unit can be continuously operated for four to six without much heating of the power electronic devices.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

CONVEYOR AUTOMATION USING EMBEDDED SYSTEM

ABSTRACT

In contrast to a desktop PC that performs a variety of tasks, a microcontroller performs a single, well-defined task. An embedded system has a microprocessor, associated peripherals and software intended for a specific purpose. The hardware is generally built for the system's specific purpose.

The project is designed of a remote area and logs the information at a base station using wireless technology. The hardware connected with AT89C51 microcontroller collects the sensor's data. The micro-controller will sense the object, whether the belt is with the motor or not. Monitors the temperature and voltage, the data are transmitted to the base station. At the receiver end, another micro-controller receives and buffers the incoming data and then it is displayed in the PC.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

DESIGN AND IMPLEMENTATION OF 600VA UPS based On 89C51

ABSTRACT

UPS control using micro controller is highly reliable less complex and economical when compared the conventional UPS system. This paper explains about the design and implementation of UPS using micro controller. The micro controller is mainly used for control applications. So, micro controller is used for this proposed work. The main function of the UPS (uninterrupted power supply) is to provide an uninterrupted power supply and it should function automatically when the mains supply cutoff. This automatic function in the conventional UPS is done by control system. It involves certain complex work. So, in this proposed work, micro controller does the automation of the UPS. Some of the automatic functions to be done by the micro controller are overload protection, no load release, deep discharge cutoff and inverter operation.

There are different types of micro controller families. In this proposed work, the micro controller-89S52 because of its high on chip ROM capacity, RAM capacity, serial ports, input ports, etc. The micro controller 89S52 is superior in its memory capacity. This micro controller is best suited for fast development. Since flash memory can be erased in few seconds compared to the twenty minutes or more needed for the 8751. By this, 89S51 is used to eliminate the waiting time needed to erase the chip and thereby speedup the development time. It is a 40 pin micro controller in which 3 pins are used for serial interfacing, i.e., one acts as receiver another acts a transmitter and the third as ground. By this we can interface any components serially, it has 4 ports, port 0, port 1, port 2 and port 3 and it is used for various functions of UPS such as on load release, deep discharge cutoff and so on. This micro controller can be operated at high frequencies and it consumes low power. Thus it is ideal for many projects.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

There are different types of UPS. They are OFF line UPS and ON line UPS. This paper focuses on the design of Offline UPS. Because it is mostly prepared than ON line UPS. For example, it finds its application in the household appliances, a personal computer, and so on.

The transistors used in UPS design are replaced, as MOSFET'S because of its certain special features as positive temperature coefficient so that it has high current carrying capability. It has low switching losses and the MOSFET turn on and turn off can be obtained rapidly. Also it is easily available and has switching performance.

The conventional UPS system involves complex control system. In order to reduce the complexity of the control system of conventional UPS embedded controller are currently being used. This project describes the design and implementation of 1KVA.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

DESIGN AND IMPLEMENTATION OF 600VA UPS based On 89C51

ABSTRACT

UPS control using micro controller is highly reliable less complex and economical when compared the conventional UPS system. This paper explains about the design and implementation of UPS using micro controller. The micro controller is mainly used for control applications. So, micro controller is used for this proposed work. The main function of the UPS (uninterrupted power supply) is to provide an uninterrupted power supply and it should function automatically when the mains supply cutoff. This automatic function in the conventional UPS is done by control system. It involves certain complex work. So, in this proposed work, micro controller does the automation of the UPS. Some of the automatic functions to be done by the micro controller are overload protection, no load release, deep discharge cutoff and inverter operation.

There are different types of micro controller families. In this proposed work, the micro controller-89S52 because of its high on chip ROM capacity, RAM capacity, serial ports, input ports, etc. The micro controller 89S52 is superior in its memory capacity. This micro controller is best suited for fast development. Since flash memory can be erased in few seconds compared to the twenty minutes or more needed for the 8751. By this, 89S51 is used to eliminate the waiting time needed to erase the chip and thereby speedup the development time. It is a 40 pin micro controller in which 3 pins are used for serial interfacing, i.e., one acts as receiver another acts a transmitter and the third as ground. By this we can interface any components serially, it has 4 ports, port 0, port 1, port 2 and port 3 and it is used for various functions of UPS such as on load release, deep discharge cutoff and so on. This micro controller can be operated at high frequencies and it consumes low power. Thus it is ideal for many projects.

There are different types of UPS. They are OFF line UPS and ON line UPS. This paper focuses on the design of Offline UPS. Because it is mostly prepared than ON



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

line UPS. For example, it finds its application in the household appliances, a personal computer, and so on.

The transistors used in UPS design are replaced, as MOSFET'S because of its certain special features as positive temperature coefficient so that it has high current carrying capability. It has low switching losses and the MOSFET turn on and turn off can be obtained rapidly. Also it is easily available and has switching performance.

The conventional UPS system involves complex control system. In order to reduce the complexity of the control system of conventional UPS embedded controller are currently being used. This project describes the design and implementation of 1KVA.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Design of Protection system based on post fault conditions obtained using symmetrical components method.

Modern power systems operate close to their security limits and require high-speed fault clearing to preserve transient stability, reduce fault damage, minimize outage duration, and improve power quality. To provide high speed tripping for faults occurring at any point on a transmission line, there must be some form of accurate protective relays which operate on the basis of post fault values.

Power systems are subjected to a wide range of small or larger disturbances during operating conditions. Small changes in loading conditions occur continually. The power system must adjust to these changing conditions and continue to operate satisfactorily and within the desired bounds of voltage and frequency. The power system should be designed to survive larger types of disturbances, such as faults, loss of a large generator, or line switching. Certain system disturbances may cause loss of synchronism between a generator and the rest of the utility system, or between interconnected power systems of neighboring utilities. If such a loss of synchronism occurs, it is imperative that the generator or system areas operating asynchronously are separated immediately to avoid widespread outages and equipment damage.

A false trip of a distribution bus can cause outages to a large number of customers as numerous feeders and/or sub transmission lines may get disconnected. A false trip of a transmission bus bar may drastically change system topology and jeopardize power system stability. Hence, the requirement of a maximum security of busbar protection. On the other hand, bus faults generate large fault currents. If not cleared promptly, they endanger the entire substation due to both dynamic forces and thermal effects. Hence, the requirement of high-speed operation of busbar protection.

In this project we describe the philosophy and design fundamentals of protection in a transmission system using the symmetrical component approach.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

The symmetrical components method is a technique that allows unbalanced phase quantities such as currents and voltages to be represented by balanced components.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

DPWM modulator using VLSI

The rapid progress in motor control and microelectronics has made the universal dc drives a major field of interest. Traditionally most of these applications today adopt either analog or microprocessor based PWM control schemes. The disadvantages possessed by these schemes are complex circuitry, limited functions and difficulty in circuit modifications.

Due to the advances in the digital technology, digital pulse width modulated convertors are becoming more popular in dc motor drive and also in dc power conditioning applications. The development in the digital signal processors has encouraged the digital PWM control. The advantages of the digital signal processors based control schemes are simple circuitry, software control and flexibility. However generating PWM signals require high sampling rate to achieve a wide band width performance. Another disadvantages is that longer time is required to develop the software in a new processor structure and moreover, processor controlled by software is not suitable for a switching circuit, which generating lot of noise, resulting in high risk of collapse.

Dynamic and ever progressing change in very large scale integration technology (VLSI) has radically affected the design process cheap, reliable and less time consuming. More over the fpga based design is also more reliable than the microprocessor based system because they do not need any control software.

Dpwm ac-dc converter serves wide range of applications and also plays an important role in the minimization of harmonics and switching losses in the converter circuits. In the past two decades various pwm strategies, control schemes and realization techniques have been developed. These pwm strategies were realized either by analog or microprocessor based software control techniques. This project proposes a novel realization scheme for dpwm ic using VLSI which may serve as the switching circuit for the ac-dc converters.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Driver circuit and DPWM converter are initially tested on a breadboard. Later they are fabricated using a printed circuit board (PCB)



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Economic dispatch using fuzzy logic

Abstract

A Fuzzy logic based solution for emission constraint economic dispatch is demonstrated in this work. The aim of this work is to minimize the fuel cost of operation of an interconnected power system with emission constraints. This non-linear constrained multi-object optimization solution has been solved by other investigator using AI computation methods. These solutions though provided a global optimal value, are not suitable for computer implementation, due to computational complexity and large computation time.

Fuzzy logic has served a black box modeling tool for engineers in application where no proper mathematical models are available. In the first phase of the work various fuzzy based models are investigated to see how they can model the nonlinearities in the generator cost equation. On intensive testing it was found that the fuzzy based model with two inputs the error and change in error was able to attain the optimal solution with highly reduced computational time, Compared to methods like simulated annealing. Five membership functions were defined for error and change in error which resulted in a rule base with twenty five rules. The error and change in error were represented with various possible membership function among them the triangular membership was chosen by trial and error method. The defuzzification method chosen was centriod method.

Results for a three generator test system have been presented to validate the proposed method. Hence this method may be used in place where a combined ECEDP is necessary.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

EMBEDDED BASED INDUSTRIAL AUTOMATION

SYNOPSIS

All industrial loads are controlled individually through manual operation. As a consequence there is a probable chance of wastage of power through manual mishandling and also industrial accidents.

Our project “EMBEDDED BASED INDUSTRIAL AUTOMATION” is to automate the tripping of loads during over voltage and under voltage conditions, non-critical loads when maximum demand condition arises. Power factor correction, which plays a vital role in any industry, has also been automated. Controls of illumination level, water level, and temperature level have been incorporated. In industries certain equipments are operated only by experienced person to avoid accidents and mishandling. Bearing this in mind, code lock and programmable load as far as scheduled operation is concerned, are implemented. Automatic switch off of all loads and arrangements for simultaneous on/off of lighting loads when a door is opened/closed, in certain areas (especially goodowns) are also included.

The significant feature of our project is a single microcontroller chip, PIC16F8XX, carries on all the above automations. Peripheral Interface Controller (PIC) is an output of the “MICROCHIPS”. Flash memory is an outstanding feature of these controllers, which is not available in other types of controllers. Other features are brown out reset, I/O port expansion and working temperature compatible to industrial areas. This project can be implemented using fuzzy logic control also.



EXPERT SYSTEMS AND SOLUTIONS

48, North Street, Aranarai, Perambalur, Tamil Nadu, India.

Email ID: expertsyssol@yahoo.com,

Website: www.researchprojects.info

Phone: 9952749533,

Embedded based water purification system

Abstract

The phenomenon of violet glow, hissing noise and the production of ozone gas in the overhead transmission line known as corona is used in our project for the production of ozone gas. The gas produce out of the device can be used for the treatments of drinking water disinfections and air purification.

The device has a discharge tube in which high electric field is applied so as to breakdown the ozone present in the air. This phenomenon occurs at field strength of about 25 KV at normal room temperature. This unit employs a high voltage of 30 KV peak at a frequency of 15 KHZ to 20 KHZ. Such a high Voltage is developed by means of Line output transformer or Fly-Back Transformer driven by a embedded controller.

The amount of Ozone output can also be controlled indirectly by varying the D.C input voltage by using a atmel 8 bit microcontrollers. Ozonation is 3125 times more powerful than chlorination. The unit can treat 5 liters of impure water in about 2 minutes. The nascent oxygen makes ozone a very powerful disinfecting agent. Ozone destroys all bacteria by cell licing.

This project is also provided with simple embedded protection circuit, using 18F877 microcontroller which prevents the POWER COMPONENT from being damaged, by High voltage spikes and low voltage surges. The unit can be continuously operated for four to six without much heating of the power electronic devices.