RECENT TECHNOLOGIES IN SENSOR SYSTEMS AND ROBOTICS IN DAILY LIFE APPLICATIONS

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EDITORIAL COMMUNICATION

The special issue of Bioscience Biotechnology Research Communications Vol 13 No (5) 2020 on **"Recent Technologies in Sensor Systems and Robotics in Daily Life Applications"** aims to provide original research articles from scholars, researchers, academia and industry on the emerging technological problems in areas of Sensor Systems and Robotics in Industries and Daily Life Applications.

This special Issue contains 20 articles on topics of Recent Technologies in Sensor Systems and Robotics. Some of the important research contributions are on Accident Prevention, Insomnia Glass, Edge Detection, Automation in Paper Industry, Image Processing and Wireless Sensor Networks and Robotics.

All submissions are well supported by proof with a direct and simulated comparison to the technical solutions, designs and implementations. The articles available in this issue will be helpful for the researchers working in these new emerging areas.

Best wishes and thank you for your contributions to this Special Thematic Issue on Recent Technologies in Sensor Systems and Robotics in Daily Life Applications

Guest Editors

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CONTENTS

Accident Prevention Using Insomnia Glass

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ABSTRACT

Insomnia glass technology plays a vital role in driving environment where used to prevent the accidents and protect everyone those who are around the driving environment. Nowadays most of the road accidents are because of drowsiness of the driver. Most of the loading vehicles and other tourist vehicles are prefer night travel in order to avoid traffic problems. During that time drivers are unknowingly closing eyes which cause major accidents and results in major loss for all around them. This project helps to give alert to drivers whenever feel drowsy. IR (Infrared) sensor used in this glass to detect the closing of eye as well as timer also used to detect the eye closing duration. In this project LM358 Operational amplifier act as a brain of this system. LED (Light emitting Diode) and buzzers are used as indicators. When LM358 Operational amplifier receives more signal from sensor than reference signal LM358 Operational amplifier will produce an output signal. Reference signal to LM358 Operational amplifier given by battery. When the sensor detects the closure of eye, it buzzers with the help of buzzer. By this the driver is helped by Insomnia glass to avoid sleep while driving which helps to prevent road accidents.

KEY WORDS: IR (INFRARED) SENSOR, LM358 OPERATIONAL AMPLIFIER, LED (LIGHT EMITTING DIODE).

INTRODUCTION

Many technologies has established to prevent accidents due to drowsy. One such technology was Insomnia glass system, function with the help of IR (Infrared) sensor and LM358 operational amplifier. Infrared sensor is used to monitor the attentiveness of the driver. If attention of the driver missing to the road a dangerous situation is detected (Wijnands et al. 2016), the system will warn the driver by flashing lights, warning sounds. In this Insomnia glass system, the IR sensor not only measure the attentiveness of the driver but also check the vigilance level. The main purpose of the Insomnia glass system, to give alert to the driver whenever drowsiness or distraction were observed (Rajahrajasingh et al. 2017). Other applications for the system also possible, such as driver identification and control functions using the eyes. These developments contribute to extreme safety and more spontaneous use of the new generation of driver assistance functions.

MATERIAL AND METHOD

The vehicle was incorporated with an IR (Infrared) sensor assembled into the dashboard and in order to focus the face of the driver.

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The main key roles were given as:
- Predict the drowsiness situation of the driver to avoid accidents.
- To give alert to the driver whenever sensed drowsiness
- Ensuring the attentiveness of the driver towards the road to avoid risky situations.

A. Existing system: The existing system named as Driver monitoring system and also driver attention monitoring system which was first introduced vehicle safety system by Toyota offered in Japan and Lexus latest models in 2006.The function of the systems combined with pre-collision system. IR (Infrared) sensors were used to monitor the attentiveness of the driver (Nidhi sharma et al. 2005). Explicitly, the CCD camera had been placed over the steering column to track the eye movement via infrared Light Emitting Diode detectors (Sakthi et al. 2019). If driver missed attention and faced any risky situation, the warning system blown alarm as well the flashing lights (Gowthami et al. 2019), along with warning sounds (Hossain et al. 2016) . Even there was no response from driver, the braking system applied automatically (Walger et al. 2018). Further the drowsiness monitored by eyelids system implemented as Toyota crown system.

B. Available Vehicles with Driver Monitoring System:
- 2006 – 2011 Lexus GS 450h
- 2007 Lexus LS 460
- 2007 Lexus LS 600h
- 2008 Toyota Crown Hybrid (includes drowsiness detection)
- 2010 Lexus HS 250h
- 2010 – 2018 Lexus GX 460
- 2017 Cadillac CT6

Figure 1: Insomnia glass for sleep detection block diagram

Block Diagram

C. System Requirements
- System : Coolers.
- Microcontroller: LM358 op-amp.
- Sensor: IR sensor, IR blaster.
- Resistance: Variable Resistance
- Input source:Batteries.

RESULTS AND DISCUSSION

Figure 2: Insomnia glass

Figure 3: Circuit Diagram of Insomnia Glass
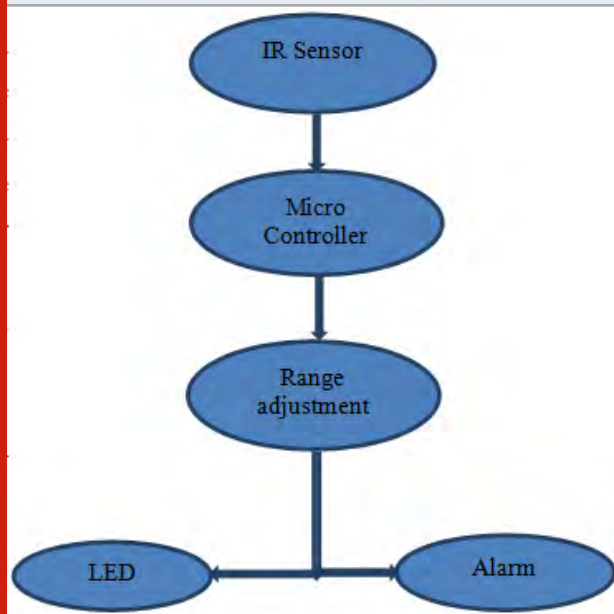
A. Proposed System: The sleep detection system was far cheaper to the existing method since Insomnia glass technology which helps to prevent accidents when driver getting drowsy using IR sensor. The system used LM358 Operational amplifier as an important part of this system. LED (Light Emitting Diodes) and buzzers were used as indicators. The basic reference signal for op-amp obtained from battery. If IR sensor detects closure of eye it will give signal to the Op-amp which will be more than reference signal. When LM358 Operational amplifier (Monisa et al.2019) receives more signal from sensor than reference signal (Kiruthika et al. 2017) LM358 Operational amplifier produce an output signal.

Many researchers investigated 20% of road accidents were fatigue-related, up to 50%. IR sensor used in this glass detect the closing of eye. Glass and circuit board connected by wires. IR sensor and receiver placed in driver's glass. If driver eyes opens IR light (Kiruthika et al. 2019) not reflect. If driver eye closes IR light reflects

to receiver and then receiver gives signal to Op-amp. When the sensor detects the closure of eye, it buzzers with the help of buzzer (Aravindaguru et al. 2019). By this the driver helped by Insomnia glass to avoid sleep while driving which helps to prevent road accidents.

CONCLUSION

Drowsiness detecting system was an important safety feature for drivers. This method was helpful for drivers in order to get attentiveness to prevent accidents. Insomnia glass technology may provide better solution during risky environment. IR sensors were used to measure the attentiveness of the driver on the road. Whenever the attentiveness missed based on eye closure timing, help of op-amp an alert signal was produced using buzzer. So that the driver was alerted, and risky environment was safeguarded. Further insomnia glass technology can be enhanced by placing contactless electrode.

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Billing of Products Using Edge Detection in Matlab

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ABSTRACT

Edge detection is one of the process-based methods for detecting object boundaries within images. Product identifiers are usually exceeded by the following commemorative pricing computers, the type of sale and the machine taking the product price to create a bill of materials on the way out. in the middle of the project is the launch of a product discovery process in real time while not only showing data to continue the process, as many stores in remote locations do not wish their customers to visit the connection problem. for example, if Moderate Soap is placed in front of the camera, it will detect transactions related to the rate and weight of the Detergent soap. will measure the award of that product

KEY WORDS: EDGE DETECTION, IMAGE PROCESSING, AMPLIFIER, ANALOG CIRCUIT, DATA ACQUISITION.

INTRODUCTION

Edge detection system is used to detect sharp cuts in an image where the resolution is a vague change in pixel strength that reflects the parameters of the scene. The most common edge detection methods include image acquisition and operator, which is sensitive to the main radios in the picture while returning zero values to the same regions. To distinguish the enormous number of clients accessible, each is intended to influence particular sorts of edges. This procedure enormously decreases the measure of information in the picture, while safeguarding the most significant highlights of the picture. Edge Discovery incorporates an assortment of scientific strategies that expect to recognize focuses in an advanced picture, where picture brilliance is high or contrasted with disappointments. The brightness of the image changes is usually set in a set of symmetrical parts of the line called edges. Phase identification is a similar issue that recognizes stops on single-flagged signals, and the sign end recognition issue is called change location. Edge discovery is an essential tool in image Processing, in the fields of feature obtaining and extraction of features. This way we can PC vision and machine vision, particularly generate revenue for Matlab products.

Literature Review

1. C. Nagaraju, L. S. S. Reddy, et al, "A Novel Method for Boundary Detection based on Edge Flow Technique", IEEE, Volume 5, Issue 9, Dec 2014 This paper proposes to explore a novel frontier based on boundary crossing. This method uses a prediction-based model to determine the color and light changes in each image area at a given rate and constructs the flow vector. By increasing the flow velocity, the boundaries can be seen at the positions of the images that meet the two opposite directions of flow in a steady state. The only important parameter required for a user-defined rate algorithm.

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2. Liang Huang, et al, "Distributed deep learning-based offloading for mobile edge computing networks", research gate journal, Volume 3, Issue 01, July 2018 This paper contemplates Mobile Edge Computing (MEC), where most remote gadgets (RGs) like to transfer their PC tasks to edge servers. So as to spare vitality and administration quality in WD, the utilization of consolidated burden goals and transfer speed designation has been created as a computational issue. Be that as it may, the issue is decreased by the scourge of greatness, which can't be adequately and viably tackled by standard control apparatuses, particularly in huge WDs. In this paper, we propose a profound learning-based offloading (DDLO) calculation for MEC systems, where numerous equal DNNs are utilized to settle on load choices.

3. Mohd. AquibAnsari ,et al"A Comprehensive analysis of Image Edge Detection Techniques" International Journal of Multimedia and Ubiquitous Engineering , Volume 12, Issue 02 ,Nov 2018 The main goal of image processing is to understand the content of the image effectively and it provides meaningful and important information. The field of image interpretation has received much attention from various researchers. One of the most serious steps in image interpretation is how to appropriately mine edge information from an image. The edges can be drawn features of the image and the outline of the object. Edge detection is commonly used in image analysis and processing. There are many different types of algorithms for detecting edges.

MATERIAL AND METHOD

Existing System: The biometrics identification scanner is an optical scanner that can peruse the printed scanner tag, decipher the information contained in the standardized identification, and send the information to the PC. It comprises of a light source, a lens and a light sensor, which translates into electrical signals for optical signals. In addition, almost all barcode readers have a circuit that can analyze the image data of the barcode provided by the sensor and pass the contents of the barcode to the scanner's output port.

Figure 1: Barcode scanning
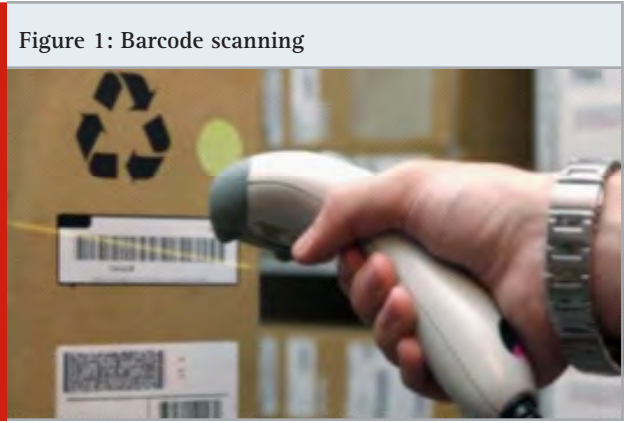
The sensor in the standardized tag scanner distinguishes the reflected light from the brightening framework (red light) and creates the simple sign that is sent to the decoder. The decoder depicts the sign, confirms the standardized tag utilizing the check digit and changes over it into content. The item is examined and the stock is consequently recorded.

Figure 2: Block Diagram of Barcode Billing system
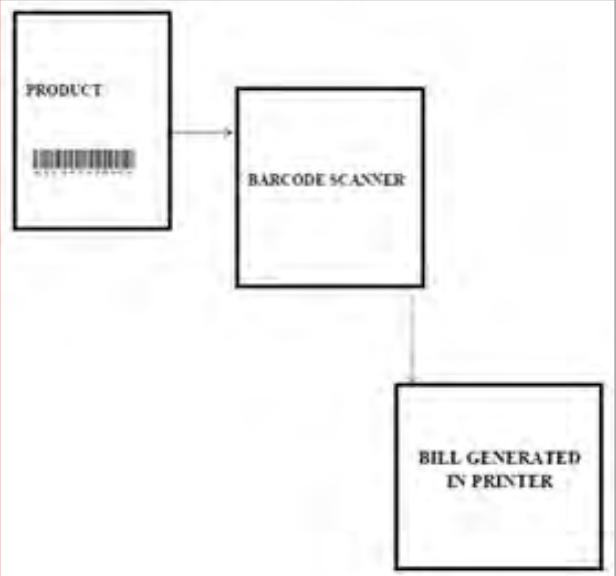
Proposed System: The billing of the product in the proposed system is done by calculating the edges of the product using the Edge Detection Algorithm. And it explores the margins of the product name so that we can make bills by eliminating human resources. In this billing process, the product is shown to interfere with MATLAB so that it is automatically detected and generated by bills in letters. The camera detects the edges and requires a sample image and about 10000 images are uploaded at different angles so that we can know.

Figure 3: Block diagram of Edge Detection Based billing system
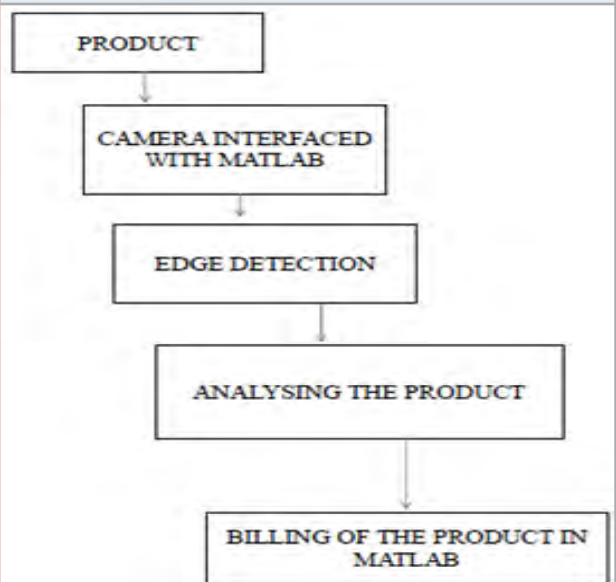
In our proposed system the margins of these boxes are calculated and the margins of the brand name are also printed. The box is also considered. These products should be shown in front of cameras that are already interfering with MATLAB. That way we can easily bill any product we choose.

Figure 4: Input Image for segmentation

RESULT

The input image represents the original image of the product, which will be taken for the edge detection of the products and image processing techniques.

Figure 5: Gray Converted Image

The grey converted image is one of the edge detection image processing technique for conversion of image to values

Figure 6: Noise Removed Image

Figure 7: Edge Segmented Image

Figure 8: Segmented Result

Figure 9: Bill generation
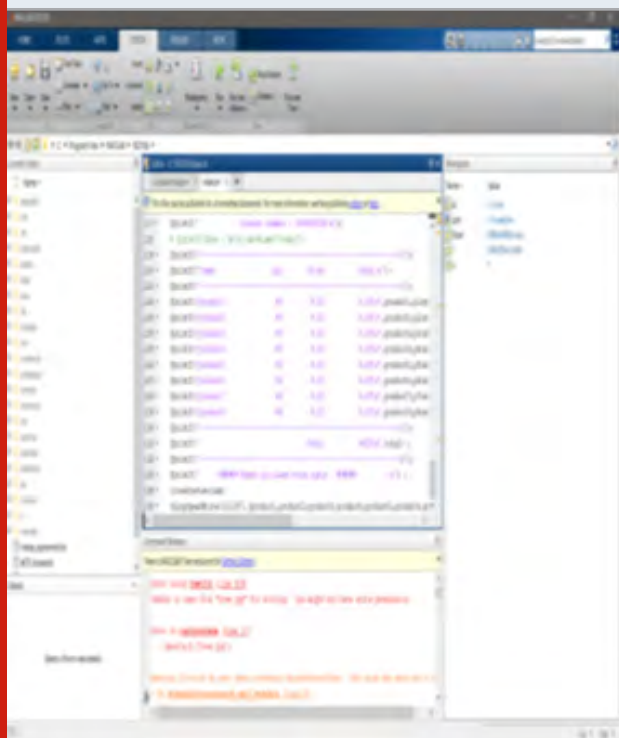
CONCLUSION AND FUTURE SCOPE

The elimination of error in barcode scanning method is the main theme of this project. Barcodes printed on the product can be erased and damaged in other ways during transportation. During our technique we can analyze and print the product bill using Edge Detection technology. All edges of the product are pre-analyzed and predefined in the MATLAB code. So when the product is shown, the bill is automatically generated. In our project we use eight products with our Matlab code, but in the future we will be able to add many other products by changing the structure of the code. This helps greatly in reducing manual work and is very effective.

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Comparision and Performance Analysis of Controller for Non Linear Process

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ABSTRACT

In the ongoing years, in process ventures the control of fluid level is obligatory, however the control of nonlinear procedure is troublesome. The procedure businesses utilize cone like tanks on account of its nonlinear shape. In this way, control of funnel shaped tank level is a difficult undertaking because of its non-linearity and ceaselessly shifting cross area. This is because of connection between controlled variable level and controlled variable stream rate which has a square root relationship. The fundamental item is to execute the reasonable controller for cone shaped tank framework is to keep up the ideal level. If you have a Simulink model of your control framework, you can recreate put/yield information as opposed to estimating it. This is likewise the estimation procedure. In this paper it is proposed to get the relative investigation of IMC, PID and Fuzzy controller for funnel shaped tank framework for nonlinear procedure utilizing MAT LAB Tool.

KEY WORDS: MATLAB, FUZZY LOGIC, IMC, PID, NONLINEAR SYSTEM..

INTRODUCTION

The control of nonlinear frameworks has been a critical research subject and many approaches have been proposed. In the greater part of the procedure ventures controlling of level, stream, temperature and weight is a critical one. They might bedelegated straight and nonlinear procedure dependent on plant elements. Control of mechanical procedure is a difficult errand for a few reasons because of their nonlinear conduct, questionable and time shifting parameters, requirements on controlled variable, collaboration among controlled and controlled factors,

unmeasured and visit unsettling influences, dead time on information and yield estimations. The control of fluid level in tanks and stream between the tank frameworks like round and hollow, cubical are direct one, however that sort of tanks doesn't gives a total waste. The seepage productivity can be improved further if the tank is completely tapered fit as a fiddle. So control of fluid level is an import and incessant assignment in process enterprises. Level of fluid is wanted to keep up at a consistent worth. This is accomplished by controlling the information stream. Estimation of weight, temperature, level and stream parameter are indispensable in all procedure ventures. While present day control hypothesis has made humble advance into training, fluffy rationale control has been quickly picking up extremity among rehearsing engineers. The controller planned utilizing fluffy rationale executes human thinking that has been customized into fluffy rationale language (membership capacities, rules and the principles understanding) It is

fascinating to take note of that the accomplishment of fluffy rationale control is generally due to the awareness its numerous modern applications. MATLAB is a based upon an establishment of complex network programming, in which the essential information component is a grid that doesn't require pre-dimensioning.

MATLAB is a result of & quot; THE Math Works, Inc". Also, is progressed intuitive programming bundle uncommonly intended for logical and designing calculation. MATLAB has demonstrated to be an entirely adaptable and flimsy apparatus for tackling issues in numerous zones. MATLAB is a superior language for specialized figuring. It coordinates calculation, perception, and programming in a simple to-utilize condition where issues and arrangements are communicated d in recognizable numerical documentation. Therefore, taking care of issues in MATLAB is quicker than the other conventional programming. It is anything but difficult to adjust the capacities since a large portion of the documents can be open. MATLAB is accordingly both a situation and a lattice/vector-arranged. Programming language, which empowers the client to construct own necessary apparatuses.

MATERIAL AND METHOD

A. Control System Design: The programmed control has become a necessary piece of present day producing and modern procedure. The control framework wherein the yield amount has impact upon the information amount in order to keep up wanted yield is called shut circle control framework. The open circle framework is adjusted into shut circle framework by giving a criticism. The shut frameworks are increasingly steady and exact even within the sight of non-linearity.

Automatic Control System:
The basic components of an automatic control system are,
- Error detector
- Controller
- Actuator
- Process
- Feedback loop or sensors

Error Detector: The function of the error detector is to compare the reference input feedback signal to produce an error, if there is a difference between them. The error signal is used to correct the output if there is a deviation from the desired value. Generally, the error signal is a week signal so we are using amplifier and controller. The amplifier is used to amplify the error signal.

Controller: The controller modifies the error signal. The amplifier is used to amplify the error signal. For better control action and to produce a control signals The Contro llers

employed may be electronics, electrical, hydraulic or pneumatics depending on the nature of the error signal.

Actuators: The actuator is a power amplifying device which amplifies the controller output and converts it into required form of energy that is acceptable for the plant. If the differences are zero or there is no error signal, the output settles at desired value.

Feedback Loop or Sensors: The feedback system samples the output to produce feedback signal, which is proportional to the current output. The feedback system usually consists of sensors and associated circuits/devices.

MATLAB tools: The tool boxes are, Control system: Gives a few highlights to cutting edge control framework structure and examination. Signal processing: Contains capacities to plan simple and computerized channels and apply these channels to information and dissect the outcomes.

System identification: Gives highlights to fabricate scientific models of dynamical frameworks dependent on watched framework information.

Robust control: Permits clients to make powerful multi variable input control framework structures dependent on the idea of the solitary worth lady of the hour plot.

Simulink: Permits you to display dynamic frameworks graphically.

Proportional Gain: The corresponding term creates a yield esteem that is relative to the present blunder esteem. The corresponding reaction can be balanced by duplicating the mistake by a consistent kp is known as the relative

Figure 1
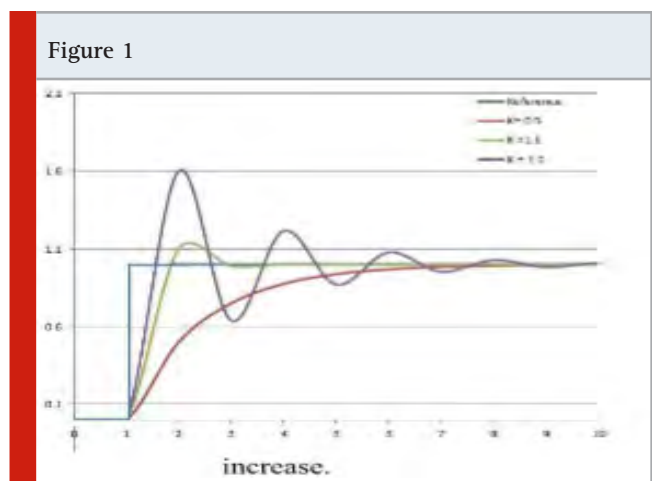
Integral Gain: The commitment from the essential term is corresponding to both the extent of the blunder and the length of the mistake. The essential in a PID

controller is the total of momentary blunder after some time and gives the collected counterbalance that ought to have been beforehand. The aggregated mistake is then increased by the necessary addition (I) and added to the controller yield.

Figure 2
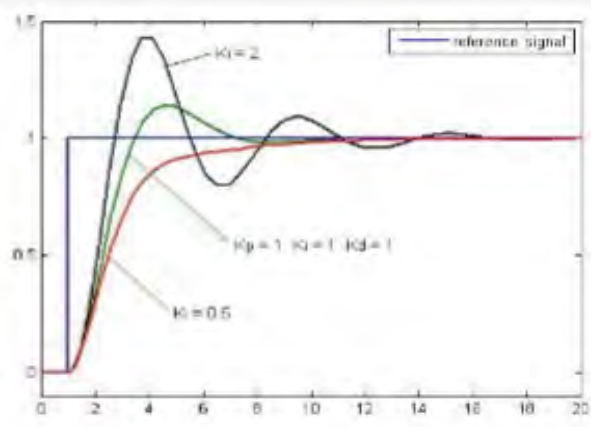
Fuzzy Logic Control

Figure 3
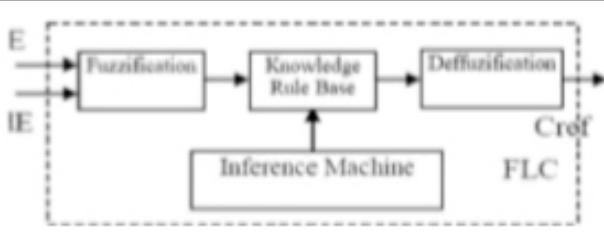
A FLS consists of four major parts:
- Fuzzifier
- Rules
- Inference engine
- Defuzzifier

RESULTS AND DISCUSSION

The level procedure station was utilized to direct the trials and gather the information.

Figure 4

Hardware Implement Kit: The PC goes about as a controller. it comprises of the product used to control the level procedure station. At the point when the set up is turned on, level sensor detects the genuine level qualities at first the sign is changed over to current sign in the range 4 to 20mA. The sign is then given to PC through information obtaining string. In light of the qualities entered in the controller settings and the set point the PC will make control move the sign sent by the PC is taken to the station again through the string. The sign is then changed over to pressure signal utilizing I to P converter.

Figure 5
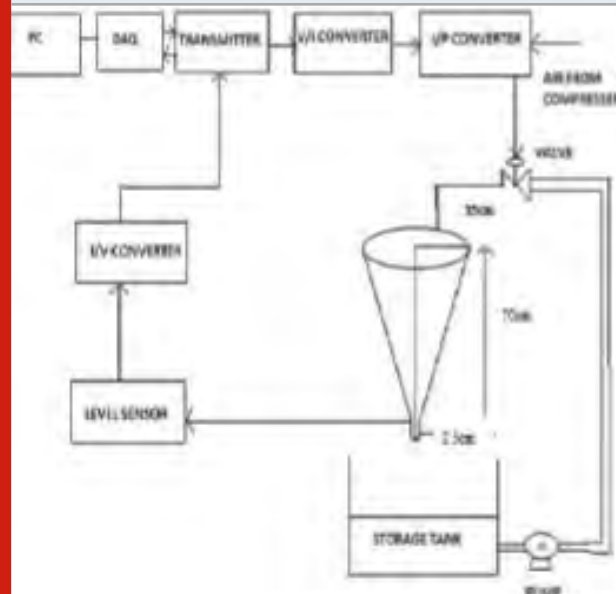
CONCLUSION

Hence the plan and usage of level procedure of funnel shaped tank framework. The ascent time if there should arise an occurrence of PID controller is less however motions created and overshoot and settling time is more. In any case, in the event of fluffy rationale controller, motions and overshoot and settling time are low, so FLC can be applied where motions can not go on without serious consequences all the while. The FLC likewise shows strong execution for plants with critical variety in elements This framework is quicker and exact. Thus, level procedure of fluffy based PID tuning technique has given the decreased settling time, consistent state blunder and settling time when contrasted with customary PID controller. Looking at the tuning of fluffy based PID controller is more precise than regular kind controller.

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Decurler Automation in Paper Industry to Reduce Web-Paper Curl

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ABSTRACT

A way and equipment are disclosed for reducing or eliminating the pre-curl in a very net of paper. The equipment includes a de-curler which can operate in conjunction with a lead in roll and a bowed roll. Motions are provided to the lead in roll and de-curler so the wrap of the net on the bowed roll remains basically unaffected by the movement of the de-curler into and out of the net. One of the above apparatus or a lead out roll may be skewed to address uneven cross machine curl profile, while the bowed roll addresses baggy ness and the de-curler, of course curl. Then paper is passed around roll to ensure that paper remain straight and tight. Then it gone through the cutter and grooved roll on prime of machine, wherever it's cut. Paper machine industries, the paper may get curl sometimes. The employee cannot able to check each and every second of paper when it is going into cutting process. So that wastage of paper will occur. So, that we are able to scale back the wastage of paper we implemented the de-curling technique. In our project we are going to reduce the wastage of paper while cutting the paper. To make this possible we implemented the de-curler technique

KEY WORDS: DECURLER LOGIC, PAPER MACHINE, SIEMENS, DECURLING TECHNIQUE, PLC (PROGRAMMABLE LOGIC CONTROLLER).

INTRODUCTION

The device for cutting or trimming a sheet of paper in any required dimension is known as paper cutting machine. The paper-cutting machine could be a recent development within the industrial world. The issue of creating a prosperous machine of this sort to satisfy the new demands for accuracy, speed, convenience, and safety, has been overcome bit by bit in recent years and there are currently many machines quite economical and adequate meet these demands of the trendy manufacturer. Cutting jobs have a vital place within the paper trade. Then paper is passed around roll to confirm that paper stay straight and tight. Then it gone through the cutter and grooved roll on prime of the machine, wherever it's cut. All paper product from the littlest label to all or any varieties of posters , brochures, magazines, books, newspapers and billboards got to be ready consistent with a selected size with regards to figure quality and client satisfaction, cutting could be extremely delicate matter within the printing trade (Sunil et al. 2017). The paper may get curl sometimes. To reduce the wastage of paper we implemented the de-curling technique.

Working Principle: The rolled sheet bundle is placed in the conveyor for cutting process. The rod is placed in between the conveyor. The induction motor is used for moving the rod on both the sides from right and to the left side. The

rod can able to move 180- degree left side and also 180 -degree right side. First the size of the rolled sheet bundle and the length, width, size is loaded in the system for the correct cutting process (Vidhate Pankaj et al. 2017). Then, how much degree does the rod would move also loaded in the system. Here, we used the siemens logic technique in Programmable logic controller.

In this we should load all the information in that it will takes process and does correctly. And when the roller gets empty the system will gives intimation to the employee and stops the process and waits for next roller sheet (Pramoth Kumar et al. 2016). So, that we can able to reduce the wastage of paper and also cuts the paper in the accurate shape. Then paper is passed around roll to ensure that paper remain straight and tight. Then it gone through the cutter and grooved roll on prime of machine, wherever it's cut. Paper machine industries, the paper may get curl sometimes. The employee cannot able to check each and every second of paper when it is going into cutting process. So that the wastage of paper will occur. So, that we are able to scale back the wastage of paper we implemented the de-curling technique. In our project we are going to reduce the wastage of paper while cutting the paper. To make this possible we implemented the de-curler technique (Robert Henty et al, 2016). This technique is based on using Programmable Logic Controller (Siemens logic). And we adding a rod in between the paper roller. This will moves both the sides.

Existing System: Once the winding and cutting operation goes on there's no thanks to realize what quantity paper had been wound and the way much is remained.

Figure 1: Paper Cutting Machine
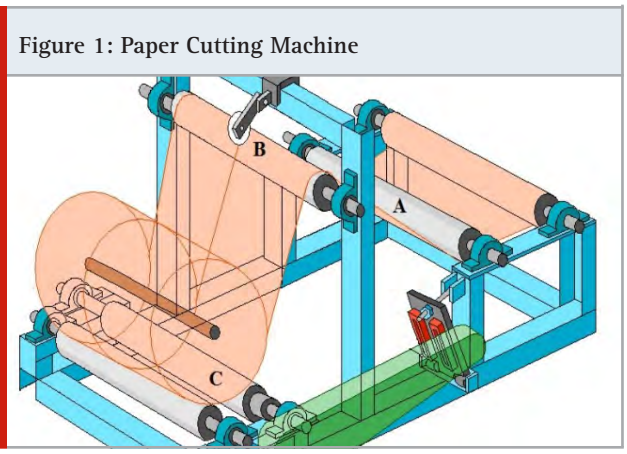
The roll of paper factory-made is mounted on the roll. During this the self-alignment bearing with inner extended ring for ease in mounting and urn-`mounting. Then paper is passed around roll to confirm that paper stay straight and tight. Then it gone through the cutter and grooved roll on prime of machine, wherever it's cut (Monisa et al. 2019). This rotating roll makes alternative rolls to rotate and not solely wound the paper however

additionally pull the paper to create the operation going.

Figure 2: Cutting Section

One important aspect is that the cutting process must be perfectly synchronised to produce the exactly right size and squareness. A conveyor belt directly after the knife section holds the sheets in position and transports them at high speed to a second conveyor belt. Here, the speed is reduced and the sheets are laid out in overlapping arrangement for further transport to the final stacked layout. The Modern cross cutters do more than just cutting. They check the quality of the paper surface, remove faulty sheets, count the sheets and insert counting strips.

Some even allow for a "flying change" process of continuous operation, in which full pallets are automatically transported off and new pallets moved into position without halting the machine (Kiruthika et al. 2019). Not capable to chop the papers higher than fifteen cm dimension. Not capable to chop bunch of papers i.e. over five papers. Not be used for big scale industries.

Proposed System: In the proposed system, we implementing the PLC based process, in this all the working matters are loaded to the system earlier. So that we need not go and check often until one roller is being completed. Here we placed the rod in middle. This rod will make the paper decurling. In all paper machine industries, the paper may get curl sometimes. The employee cannot able to check each and every second of paper when it is going into cutting process. So that the wastage of paper will occur. To reduce the wastage of paper we implemented the de-curling technique.

In our project we are going to reduce the wastage of paper while cutting the paper. To make this possible we implemented the de-curler technique.

This technique is based on using Programmable Logic Controller (Siemens logic) and we adding a rod in

between the paper roller. This will moves both the sides. The rod has the capacity to move 180° front side and also moves 180° back side. So that, it will remove all the de-curled sheets in that section. Hence it is very easy to cut the paper in a correct size and there is no wastage of paper while cutting the sheets. This is the Part which we are newly implemented in our project.

Figure 3: Movable rod cutting method

It reduces the wastage of paper. This system is cost efficient. Implementation of the rod is simple. It decreases time consumption.

Programmable Logic Controller: A programmable logic controller (PLC) or programmable controller is associate industrial digital computer which has been ruggedized and custom-made for the control of producing processes, such as assembly lines, or robotic devices, or any activity that needs high dependability, simple programming and method fault designation. PLCs were initial developed within the automobile producing trade to produce versatile, rugged and simply programmable controllers to exchange hard-wired relay logic systems. Since then, they need been wide adopted as high-reliability automation controllers appropriate for harsh environments. Early PLCs were programmed in ladder logic that powerfully resembled a schematic diagram of relay logic. This program notation was chosen to cut back coaching demands for the prevailing technicians. Alternative PLCs used a type of instruction list programming, supported a stack-based logic problem solver.

Simulation: So as to properly perceive the operation of a PLC, it's necessary to pay extended time programming, testing and debugging PLC programs. PLC systems are inherently pricy, and down-time is commonly terribly pricey. Additionally, if a PLC is programmed incorrectly it may end up in lost productivity and dangerous conditions.

Basic Function: The foremost basic operate of a programmable controller is to emulate the functions of electro-mechanical relays. Distinct inputs are given a singular address, and a PLC instruction will take a look at if the input state is on or off (Gowthami et al. 2019). Even as a series of relay contacts perform a logical and performance, not permitting current to pass unless all the contacts are closed, thus a series of "examine if on" directions can energize its output storage bit if all the input bits are on. Similarly, a parallel set of directions can perform a logical OR.

The output of every rung sets or clears a storage bit, which can be related to a physical output address or which may be associate "internal coil" with no physical association. Such internal coils will be used, let's say, as a standard component in multiple separate rungs. Not like physical relays, there's sometimes no limit to the amount of times associate input, output or internal coil will be documented in a very PLC program.

7.1. Plc Siemens Logic Structure

Figure 4: Pulse Train Generation
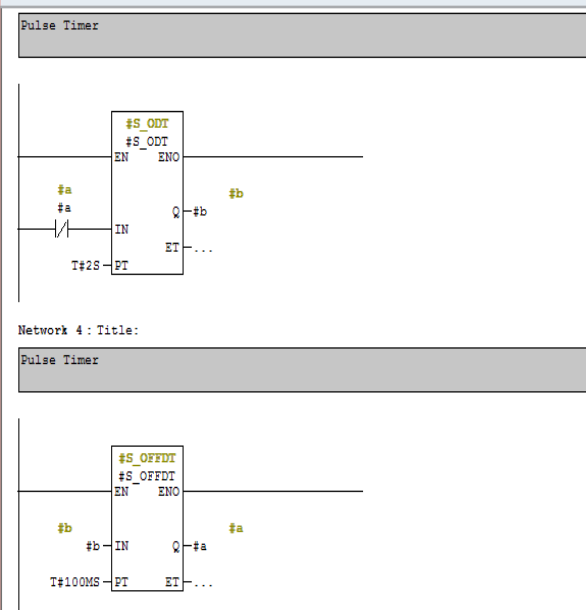
This block is used to generate the pulse. Here the pulse is generated by based on the timer. This is pre-installed by the employee in the PLC system. According to that the pulse is generated and saved in the system. This block is used to manage the error occurred in the system and change the set point to get a required output. The general error occurs in this is Hysteresis error.

Structured Text Language: This block is the structured text language. This is one of the important block in the logic. If the diameter is loaded wrongly there is lag at the time of process. So, the diameter is carefully calculated for every roll. This block is used to transfer the minimum decurler output during the set change. This will happen at every time of new roll.

Figure 5: Error Limitation To Plus

Error Limitation to plus or minus 1.0
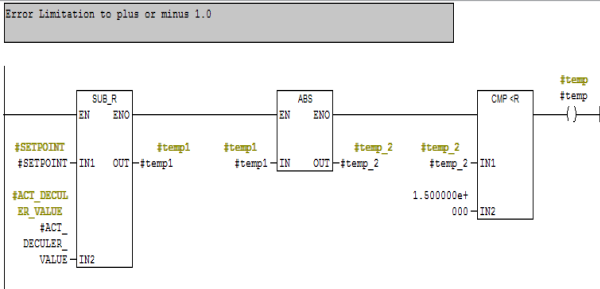
Network 6 : Title:

Output Limit to Zero During set change operation
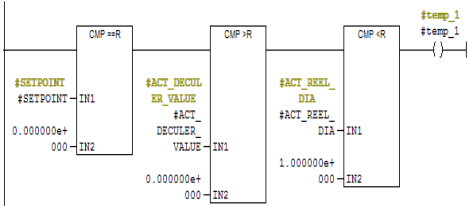
Figure 6: Structured Text Language

Figure 7: Transfer Min Decurler O/P during Set Change
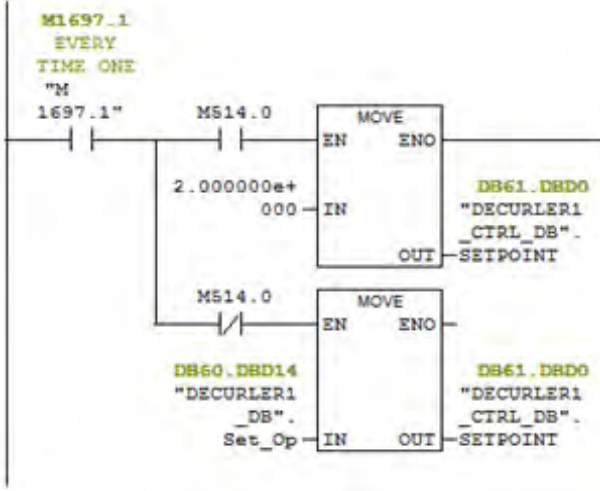
This block will help to controls the FB1 AND the FB2. If the system is satisfies the o/p then it will start the FB2. But if the FB1 is not satisfied then the break is applied and starts from first. This is the main role of the control logic block. This is the reset logic block, when the roll is completed, the sensor senses that and the signal is transmitted to the system. And when the new role is placed, the value which is obtained in previous roll is reset to 0. So that there will be reduce the error and wastage of paper.

Web Decurler

Figure 8: Web Decurler Positive Logic
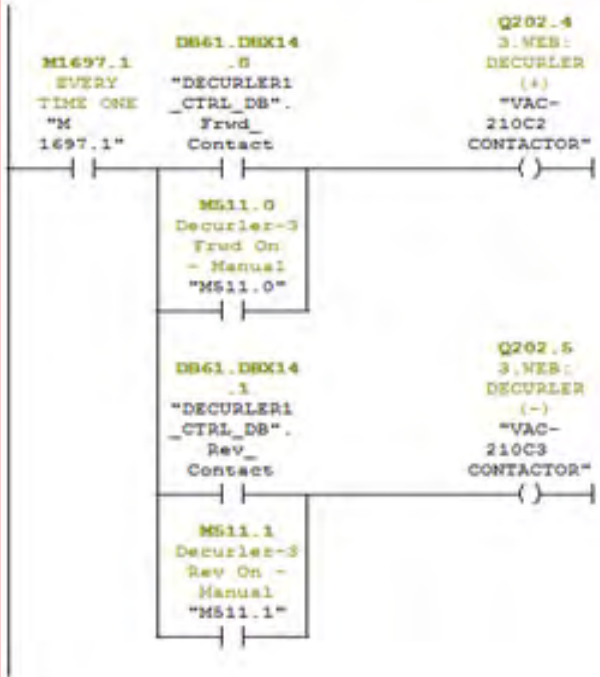
Figure 9: Output function of Decurler

RESULTS AND DISCUSSION

We used the Siemens logic technique in Programmable logic controller. In this we should load all the information in that it will takes process and does correctly. And when the roller gets empty the system will gives intimation to the employee and stops the process and waits for next roller sheet. So,that we can able to reduce the wastage of paper and also cut the paper in the accurate-shape.

CONCLUSION

The decurler logic is intended exploitation plc are disclosed for reducing or eliminating the pre-curl in a very web of paper. The proposed logic which controls the movement of the decurler and reduces the pre-curl effectively minimizes the loss of time and material which increases the productivity in manufacturing.

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Design of Digital Filter for Biomedical Signal Processing and Power Analysis of Folded Linear Direct Form FIR Filter

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ABSTRACT

The aim of the research work proposes the design of low power digital filter for biomedical signal processing and decreased the Power, Area in the Finite Impulse Response (FIR) circuits. The proposed folded linear direct form low power finite impulse response filter is planned by using 2:1 Multiplexer Data flip flop. The plan of data flip flop for low power is consumed in addition to low power blocks are designed on the planned Finite Impulse Response Filter method and the power results are compared for enhanced performance. The FIR filters are planned in direct form non folded and folded method to filter biomedical signal. A novel method called folded low power filters is also planned in linear phase. The low power finite impulse response filter constructed by using low power adder cells, multiplier cells and 2:1 multiplexer data flip flop. The simulation of circuits is completed by using TANNER S-EDIT tool. The performance of the proposed method is also compared with several existing research works to study its efficiency and less power consumptions in implementation of a FIR low pass filter. The folded filters and non folded filter with CMOS adder multiplier and new multiplexer data flip flop the reduction of transistor count is 32% and 40 % power reduction is compared to existing data flip flop folded and non folded filters.

KEY WORDS: DATA FLIP FLOP, FINITE IMPULSE RESPONSE FILTER, FOLDED FILTER, MULTIPLEXER, NON FOLDED FILTER.

INTRODUCTION

The digital filters are utilized in computerized signal handling application. The filters are Finite Impulse and Infinite Impulse response type filters. The FIR filters are non recursive sort, the showcase yield tests relies upon the show input test and past information tests and IIR channel are of recursive kind, the presentation yield test relies upon the showcase contribution, past info tests and yield tests. In numerous computerized preparing applications FIR filter are favored over the IIR filter. The accompanying points of interest of FIR filters are steady, direct stage configuration, acknowledged in both recursive and non recursive structure (Kiruthika et al. 2019).

The FIR filters are liberated from limit cycle motions, when actualized on a limited word length computerized framework. The structure strategies start with necessities and condition the FIR filter. The technique utilized in the plan procedure of the filters relies on the usage and details. There are a few central focuses and bothers of the structure strategies (Sakthi et al. 2015). Accordingly, it is essential to pick the right procedure for FIR filter structure. Because of proficiency and straightforwardness of the FIR filter, most ordinarily window strategy is utilized.

MATERIAL AND METHOD

The direct structure FIR channel can be ordered into two types of non folded type direct structure FIR filter and folded type direct structure FIR filter. Both direct form structures likewise contain a similar number of multipliers, these equivalents M+1. Be that as it may, on the off chance that you play out the increases in equal and, at that point perform summations on the multiplication products for the two structures, the FIR direct structure transposed structure has better planning execution in better time of the fact that the postpones following the adders in this structure can store the summation results incidentally for in performance out the summation in equal (Kiruthika et al. 2017).

In any case, the FIR direct structure is increasingly proficient in light of the fact that this structure requires less memory. FIR filter can be classified on the basis of phases or symmetry. So the filters can be in both Nonlinear and linear phase. The main difference is in the symmetry, linear phase filters have symmetry while nonlinear filters have no symmetry. Linear phase filters need only fewer coefficients while nonlinear need randomly distributed more coefficients. In the linear phas3 filters need only fewer coefficients. In the linear phase there is a special structure for FIR filters know as "minimum multiplier structure" or folded FIR filters (Aravindaguru et al. 2019). We can eliminate multipliers at the expense of implementing more adders.

In folded filters, the multipliers are made common between the delay elements and adders. In the Non folded filter with n bits per input and coefficient, 2n bit adders are used in the adder portion, where as in the folded filters with n bits per coefficient and adders, both n bit adders and 2n bit adders are used for the adder portion. The architecture of both direct form, transposed form and their Non folded direct form, transposed form and their folded filter can be expressed in linear phase in which the coefficients c(0) and c(3) are equal and c(1) and C(2) are equal ie FIR filters are usually to be in linear-phase.

An important benefit of the folded FIR structural design is that they lead to decreased equipment in examination with the unfolded plans [2]. A FIR channel direct stage if (and just if) its coefficients are balanced around the inside coefficient, that is first coefficient is equivalent to the last; the second is equivalent to the close to-last, and so on. (A FIR channel straight stage having an odd number of coefficients will have a solitary coefficient in the middle which has no mate).The figure (6.3) shows the folded direct form FIR filter (Kiruthika et al. 2018) in which for a four tap filter only two coefficients are needed. That is the coefficients are shared between adders and multipliers.

In nonlinear phase no folded technique can be implemented because of the lack of symmetry. But linear phase is really symmetric and also only fewer coefficients need to be used. The figure1 is the nonfolded transposed form FIR filter in which also the coefficients at the end

are equal about the centre coefficient. And figure2 is the folded transposed FIR filter in which also two coefficients are needed for 4 tap filter (Kiruthika et al. 2017).

Figure 1: Non-folded linear Direct Form FIR filter
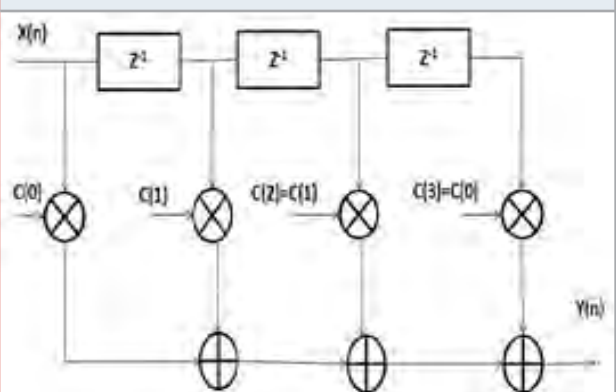
Figure 2: Folded linear Direct Form FIR filter
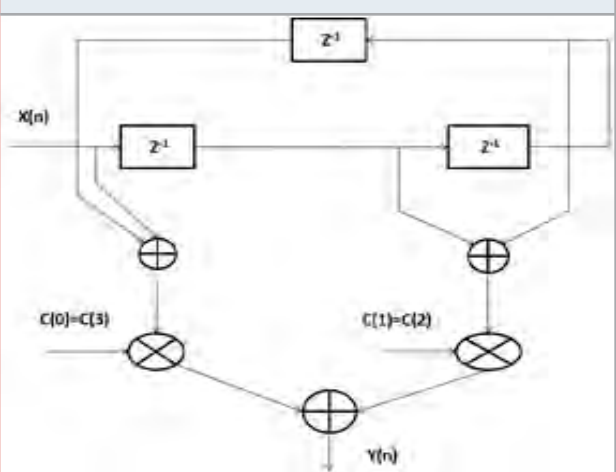
Data Flip Flop Method: The finite impulse direct form folded and non folded filters are implemented by using as delay element data flip flop. Existing Data Flip flop is implemented by using fourteen numbers of transistors shown in figure.

Figure 3: Circuit diagram of existing Data Flip Flop
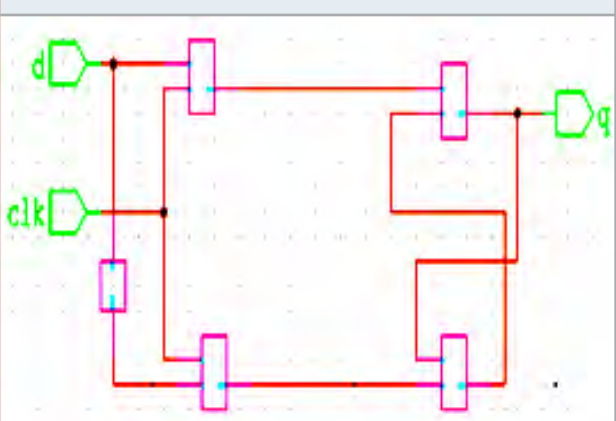
The new proposed design of 2:1 Multiplexer Data flip flop by using two transistors. In new method data flip flop is made by reducing the 12 transistor of existing data flip flop shown in figure. The 2:1 multiplexer data flip flop is consumed less power and area (Kiruthika et al. 2019).

Figure 4. 2:1: MUX data flip flop
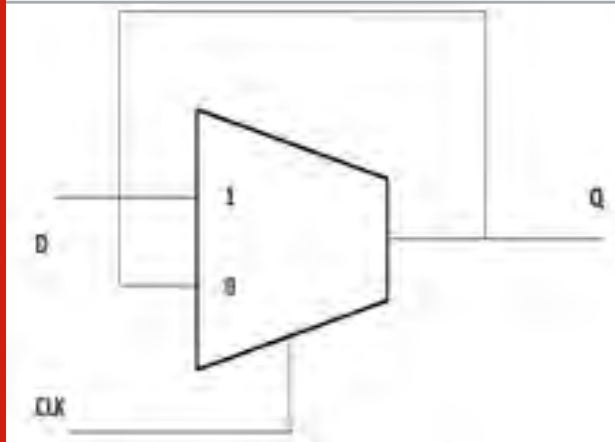
Figure 5: Circuit diagram of 2:1 MUX data flip flop
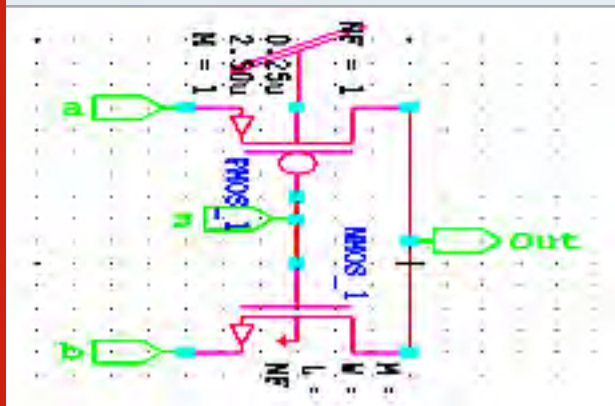
RESULTS AND DISCUSSION

The Finite impulse response Filters are structured with multipliers. The multipliers are inside structured utilizing distinctive kind of full adder units. The Direct structure linear FIR filter appeared in figure is planned utilizing existing Data flip flop is having 14 transistors. The similar direct form filter is planned by means of 2:1 multiplexer data flip flop which is having just 2 transistors and has less power utilization than typical Data flip flop.

The chart in figure is a force assessment of flip flop with 14 transistors and between the flip flop with 2 transistors. Here is two kinds of strategies in linear phase they are non folded direct form FIR filter is planned utilizing ordinary Data flip flop and afterward direct structure folded direct form FIR filter is planned utilizing proposed Data flip flop.

Figure 6: Digital FIR filter output waveform
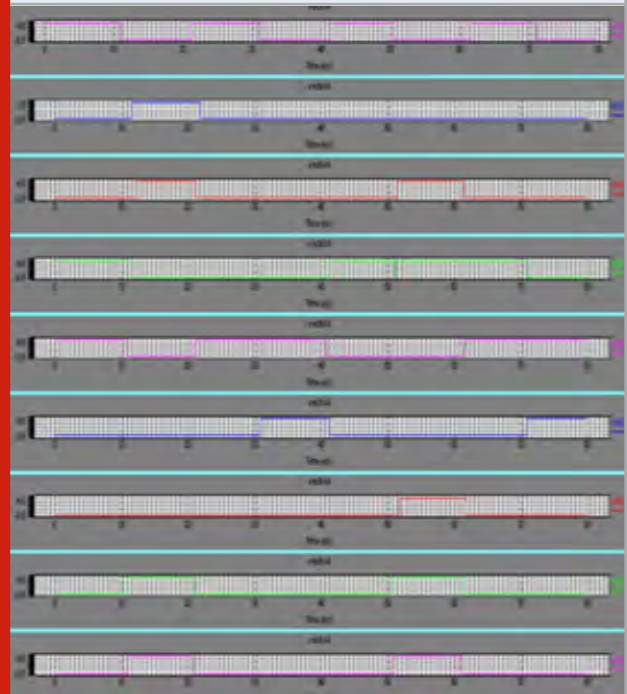
Figure 7: Direct form Folded FIR filter power output waveform
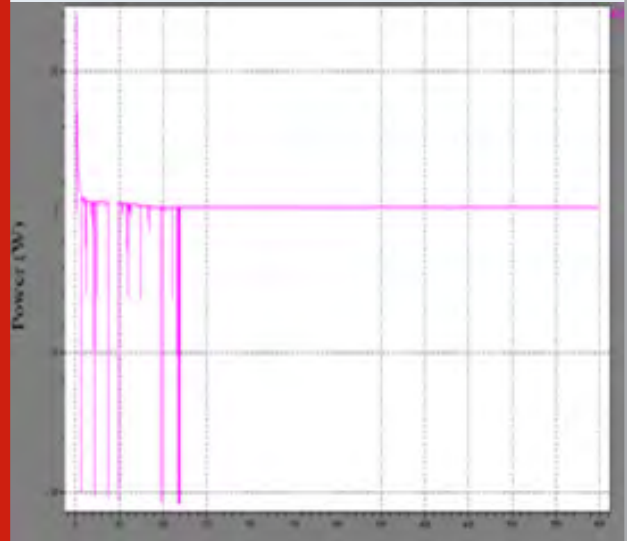
The folded direct form FIR filter through Data flip flop using 2:1 MUX is create in the direction of actually power proficient and has fewer transistors than Non folded direct form FIR filter with Data flip flop using 2:1 Multiplexer. In the evaluation the folded linear Direct Form FIR filter is estimate to have 40% power reduction.

Table 1. Power Comparisons of FIR Filter				
Filter Type	Power(w)		Transistor count	
	Existing Data flip flop	Multiplexer Data flip flop	Existing Data flip flop	Multiplexer Data flip flop
Non Folded type filter	0.496	0.386	1280	992
Folded type filter	0.395	0.200	904	616

CONCLUSION

The transistor calculation of the finite impulse filters also excellent reduction is obtained. The evaluation between the Non-folded filters and folded filters with normal Data flip flop and multiplexer data flip flops are completed. The folded filters and non folded filter with CMOS adder multiplier and new multiplexer data flip flop the reduction of transistor count is 32% and 40 % power reduction is compared to existing data flip flop folded and non folded filters. The folded filter used for biomedical signal processing applications.

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Research Communications

Design of LabVIEW Based System for Monitoring and Controlling of Hazardous Effluents Emitted to the Environment by Paper Industry

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ABSTRACT

Controlling and Monitoring of industrial parameters have become the great challenge to the paper industry in order to protect the environment. Each genuine occurrence occurred from minor shortcomings. The hazardous effluents emitted like steam temperature, Carbon monoxide, pH level smoke, gas leakage and so on assumes a crucial job and it has standard cut off points in the field. The principle goal of our undertaking is to control these parameters causing contamination and to diminish the impacts without influencing common condition. The framework is actually utilizing LabVIEW programming, which is used to screen the contamination and furthermore send the controlling sign to Arduino, when there is an unsettling situation in the standard of the framework. If there is any deviation in the settling point, the system gives an alert thereby the controlling of the parameters can be obtained.

KEY WORDS: LABVIEW, TEMPERATURE, PH, ARDUINO.

INTRODUCTION

With the advent of new technologies and necessities of the people, many process industries have been evolved. Due to these industries, there are many impacts on the environment. Thus, technology and its impacts are the two sides of a coin. It is necessary to protect the environment by monitoring different parameters like temperature, pressure, level and flow in the process industries. In this project, the important parameters such as temperature and pH level in the paper industry (Monisa et al. 2019) must be monitored and controlled by using LabVIEW. When these industrial taints are being monitored, the environment is protected from the hazardous disaster. The value of such industrial parameter values must be maintained in its limited range. When its range is high or low, the system designed will monitor and intimate the level of the parameters to the monitoring person.

MATERIAL AND METHOD

A. LabVIEW: LabVIEW (Laboratory Virtual Instrument Engineering Workbench) (Utgikar et al.2016) is a working platform in which the program is developed to monitor and control the industrial parameters. The product might be the giving the most considerable segment

of the framework. The principle routine or VI, gives a front board interface that permits the administrator to control what's more, screen the framework, it calls to perform capacities that assemble simple information, send simple yield. The front board is the thing that permit the administrator to control and screen the procedure it incorporate programming control and pointers imitate physical control, for example, catches, sliders, LEDs, diagrams. The square outline is the graphical portrayal of the product program. It comprises of symbols that speak to ordinary programming components, for example, constants, factors, subroutines and circles.

LINX permits client to manage the sensors and secure information using the Arduino microcontroller utilizing the graphical programming condition LabVIEW. Arduino microcontroller gets its input that is interfaced with LabVIEW VIs through a sequential association. It assists with moving data from the microcontroller I/O pins to the platform of LabVIEW without altering the correspondence, synchronization. Utilizing the normal open, read, compose, close show in LabVIEW, we can get to along these lines the advanced simple heartbeat width tweaked I2C and SPI sign of Arduino microcontroller. The LabVIEW programming bundle from national instruments is used to build up the custom information about the level of the temperature, pH of chemicals used in the treatment process and the effluents emitted from the paper industry. The block diagram is shown in the figure.

Figure 1: System Overview
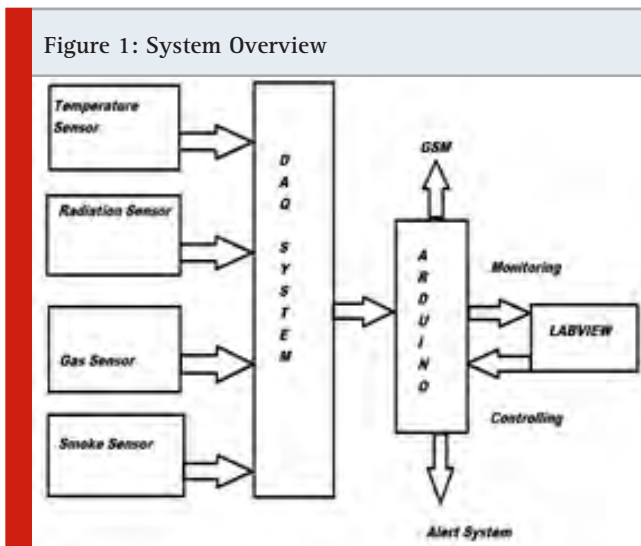
The different sensors placed in the industry environment where the parameter has to be monitored and controlled which sends the data to the microcontroller board that can be visualised in the PC through LabVIEW. This method is used in the industries, which is cost effective.

B. Microcontroller: Arduino is a type of microcontroller which is embedded on a single board (Vimala Devi et al.2018) expects to make utilization of interactive item or situations progressively available. The microcontroller is open-ended source for writing the programs and running the programs on board. Arduino controller is

user friendly and it is reprogrammable. It is connected to the external devices such as switches, alarms, relays and sensors for controlling purposes. Arduino has a few favourable circumstances for instructive also, intrigued recreational over other framework like cheap, open extensible software, extensible equipment.

C. Temperature Sensor: The commonly used temperature sensor is the RTD (Resistance Temperature Detector). The principle of the sensor is positive temperature coefficient of resistance, if the temperature increases the resistance also increases. A Pt-100 type of RTD is used which provides the output range 0 to 1 volt for 0-100°C and it has the sensitivity of 10mV/°C (Sureshkumar et al.2014).

D. Smoke Sensor: Smoke sensors (Monisa et al 2019) are used by the industries to detect smoke, which is the initial stage of the fire. Manufacturers develop smoke sensors and it is connected to an alarm system, which indicates the workers about the cause of the fire. The smoke detectors response is much faster. An ionization chamber is created due to the presence of radioactive particles passes between the electrically charged plates.

The smoke sensor has two chambers. One chamber is designed which is open to atmosphere and another is the reference chamber which is made not to allow the particles. Due to the presence of radioactive particles in those two chambers ionizes the air molecules and produces the potential gradient in it. If any smoke particle enters the ionization chamber, it does not allow the air molecules to produce the potential gradient and thereby no electric charge flows. This is because of the alpha particles in the smoke, which disturbs the ionization process and thus activates the alarm to be functioned.

D. Gas Leakage Sensor: A Liquefied Petroleum gas sensor is a one sort of gadget that is utilized to detect the nearness of a dangerous gas spill in administration station, vehicles, stockpiling tanks and homes. This sensor is connected to a caution circuit to give an alarm to the administrators through a ringer sound in the territory where the gas spill is happening. The gas leakage-detecting sensor is likewise used to distinguish tobacco smoke, poisonous gases, flammable, propane, iso-butane and LNG.

The proposed framework utilizes a gas sensor to detect the leakage of gases by the specific property of the particular gases. We have utilized a LPG gas sensor module to identify the spilled gas. When LPG gas spillage happens, it gives a HIGH output on its pin specified for it and Arduino consistently peruses its output on it. At the point when the Arduino controller gets an elevated output from a gas sensor then it shows a message on the LCD screen. This shows and enacts ringer to produce signal sound. At the point when a Liqufied Petroleum gas sensor gives a slowdown output to Arduino board, at that point the showcase shows "no gas spillage" message.

The sensors directly detect the gases such as carbon

monoxide, nitrous oxide, and sulphur dioxide in the atmosphere. Some sensors detect only specific type of pollutants and cannot measure the content of the pollutant. For example, the dissolved oxygen (DO) sensor, the pH sensor, and the electrical conductivity sensor fall into this category (Xu Luo et al.2019).

E. Radiation Sensor: A radiation detector (sensor) is a gadget for detecting nuclear, electromagnetic or light radiations. This atomic radiation sensor detects the atomic radiations on the principle by calculating the discharge of ionizing radiations of alpha, beta and gamma particles. Additionally alluded to as a Geiger counter, an atomic radiation identifier comprises of two principle components: the handling gadgets and the Geiger tube. The Geiger tube is loaded up with low-pressure latent gas like helium, argon or neon. On the off chance that radioactive radiation happens, the latent gas is ionized. An anode inside the Geiger tube enrolls the amount of ionized particles numerically corresponding with the quality of the radioactive radiation (Kiruthika et al. 2019). The radioactivity estimation is then shown on the LCD screen of the Geiger counter or atomic radiation indicator.

The important note on this device is the utilization of a special material, which sparkles or "shines" when radiation is exposed to the material. Sodium Iodide is the material, which is commonly used. The sparkle produced from the scintillation process is reflected through a window. This sparkle reflects and passes to the new device called photon detector (photomultiplier tube). The photo cathode is used to make the first segment of the tube. When the light or the sparkle strikes, the photocathode electrons are produced. In the photomultiplier tube a series of dynodes are placed in order that the electrons come and strike the dynodes. These electrons then strike the next dynode where again it produces more number of electrons until the last dynode (Gowthami et al.2019).

F. Proposed Work: The proposed system consists of sensor network and a base station. The PC with LabVIEW software consists of RF module which serves as the base station for the network.The acquired signals from the different sensors located in different areas are given to the microcontroller unit. The Arduino microcontroller serves as the base station (Sureshkumar et al.2014).

The NI Wi-Fi (Sureshkumar et al.2014) information procurement (DAQ) gadgets use IEEE 802.15.4 (Saravanan et al.2014) to stream persistent waveform information over a Remote system. The preamplifier unit is connected to the DAQ system (Aravindaguru et al 2019). Since IEEE 802.15.4 uses over-the-air RF flags as its physical transmission medium, it offers one of a kind security challenges past those of a wired framework. NI Wi-Fi DAQ bolsters the most elevated financially accessible security, IEEE 802.15.4, for powerful assurance of remote information transmissions, a Wi-Fi arrange must have a solid encryption calculation (figure) and some type of key administration.

RESULTS AND DISCUSSION

This paper clearly explains about the operation of the system in which the different industrial parameters temperature, smoke, radiation and pH can be monitored and controlled. In the different hazardous areas and the parameter monitoring environments, the data acquired from the sensor nodes are visible in the PC installed with LabVIEW. The normal level of the parameters are already loaded in the LabVIEW as if there is any deviations in the normal range there is indication in the front panel of the LabVIEW GUI.

Figure 2: Front Panel output in LabVIEW
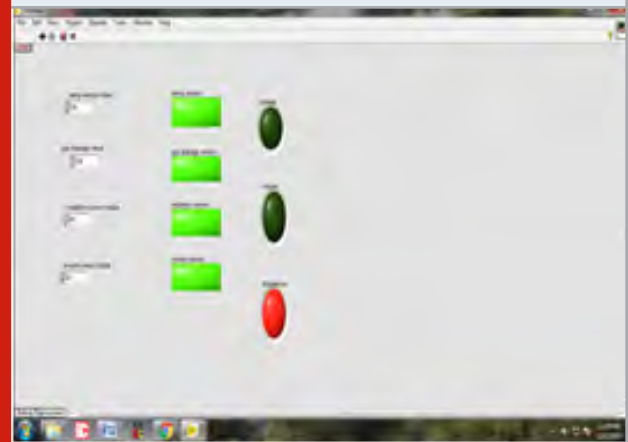
Figure 3: Block Diagram in LabVIEW

Figure 4: Block Diagram in LabVIEW

CONCLUSION

It has been shown by simulation that LabVIEW can be used to design a controller for controlling and monitoring the different parameters like temperature, smoke, gas leakage in paper industry.The proposed method is proved efficient and cost effective. It is important to control the hazardous emissions from the industry in order to protect the environment. This method provides the effective result when compared to the other tools because of its user-friendly graphical language.

TamilNadu Newsprint and Papers Limited recently developed a system to monitor the efficiency of the sheet cutters in the paper machine finishing area. It is implemented to increase the productivity of the process by calculating the efficiency using speed of the machine. In future the above system can also be can be used for monitoring the speed of the different sheeters and cutters.

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Smart Voting System

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ABSTRACT

Fake vote is the important concern that should be eliminated in the existing system of voting, In order to bring this into practice smart voting system is used. In this method AADHAR card details is utilized, so thatfake vote can be prevented. In addition to this the expense carried out for generating voterIDcould be avoided.The electronic voting systems can be employed that replace the incident and most importantly error-prone human Component. In our project we design biometric based voting system. The main aim of our project is to increase the flexibility security, reliability, scalability of the model and less time consumption to announce the result. As AADHAR card is mandatory one in India with the help of this verification we are going to implement finger print voting system. As AADHAR card stores the details of a particular person like finger print, facial image and iris, when a person polls his/her vote the fingerprint will scanned and compares with the fingerprint which is recorded in AADHAR and checks the eligibility. Vote counting will be immediate, fast and secure. This will be done with the help of Arduino controller. For programming we use python language. Therefore the mistakes done during election time or the mistakes done during counting the vote can be avoided and the right candidate can be elected.

KEY WORDS: ARDUINO, BIOMETRIC SENSOR, PROTEUS APPLICATIONS .

INTRODUCTION

In this 21st century India needs an effective and safe voting system to elect a right person as because voting systems are controlled illegaly. Our project aims to develop a security and true election. To elect the right person each and every Indians have the right to vote. Effective voting process is required as the system is damaged. The following steps are used in order to cast a vote: voter verification and identification, Voting of votes in ballot, counting of votes through ballot and then publication of result. Once the following steps are followed the person who has elected will be placed in the position of higher authority.

Fake votings can be reduced by using a secured voting machine using. In which a key number i.e. An AADHAR number has been created. Biometric number is used inorder to provide additional security and identification. During an election ballot, the verification of votes can be done with a biometric pattern. If the biometric information of the voter is the same as the AADHAR database then the person is allowed to vote. Here they voted for the members who fought and ended up in the Arduino administration. The administrator and the user are both able to view the data but are unable to perform maintenance on the controller. So there is a way to emerge

from the wrong that will subtly help you choose the right leaders who have the power to rule our country.

The clever voting system comes after the idea that in addition to reducing the percentage of voting in India, another major concern is avoiding fake votes.Before we can figure out how to increase the voting percentage we need to know what the reason for reducing the voting percentage is.

There are two main reasons,
1. People were tired of standing in the main line to cast their votes.
2. People outside his hometown wondered why he was considering going to the polls.

MATERIAL AND METHOD

A.Existing system: Electronic voting is a ballot that works under electronic conditionto assist or monitor the polling and counting of votes. With the help of specific functionality, voting can be done using electronic voting machines (also called EVMs) or computers connected to the Internet. It may include a range of Internet services, from basic distribution of reported results to the use of full online voting by standard connected home devices.

The automation level can be limited to the voting mark, or it can be a complete voting system, voting recording, data translation then forwarding to servers then integration then placement of election results.

A proper election system should work for most of these things while keeping up with the set of standards regulatory agencies then must be able to effectively meet the strict requirements related to safety, accuracy, speed, integrity, privacy, visibility, accessibility, cost, weight and environmental stability. Both programs are the same, and are for the specification of the Election Commission of India. The system consists of a list of two devices running on 7.5 volt batteries. For one device, the voting unit that is used by the voter, and the other device called the control unit is used by the electoral officer. The two units are connected by a 5-meter cord.
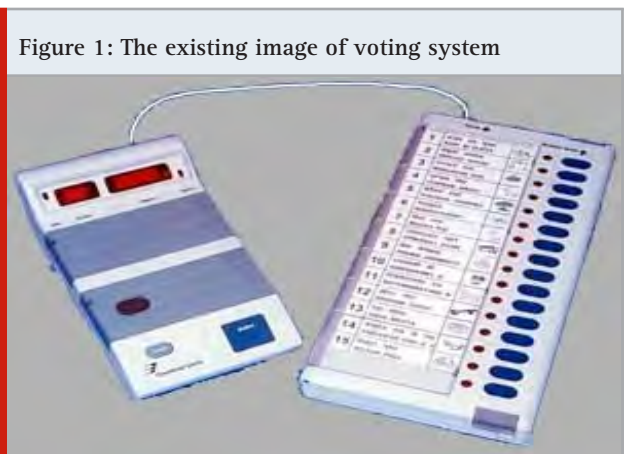
Figure 1: The existing image of voting system

The first unit named voting unit consists of blue button on each person who stands for election. The voting unit accommodate 16 people, split into four units therefore total accommodation is upto 64 people. The control unit has 3 buttons at the top. 1st button is to see the number of votes cast so far, 2nd button to cast one vote and the third button to close the election process. Result button is sealed and hidden.

B. Proposed systems: In our system of voting we ensures the most secured process of voting in which the voting system is linked with the aadhar details. The security f this voting system involves with there cognition of finger print and the face of the voter. By this system people can vote from any where and then umber of votes poled is determined at instant. By the implementation of the system the total number of votes poled is increased with the increase of security in poling and thereby prevent the fake vote.
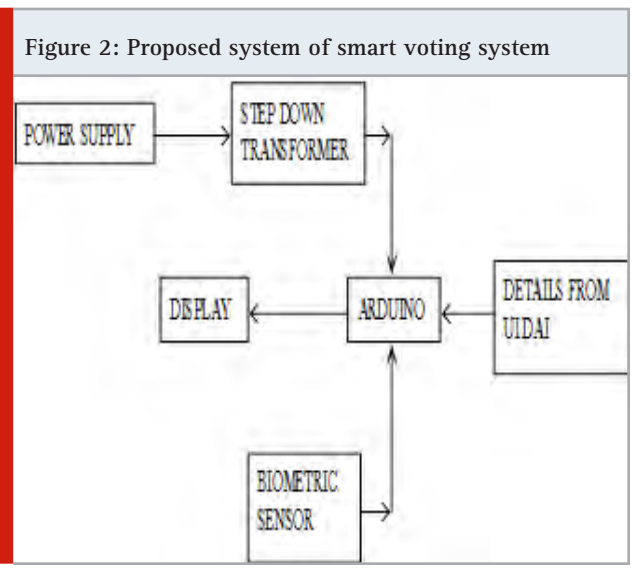
Figure 2: Proposed system of smart voting system
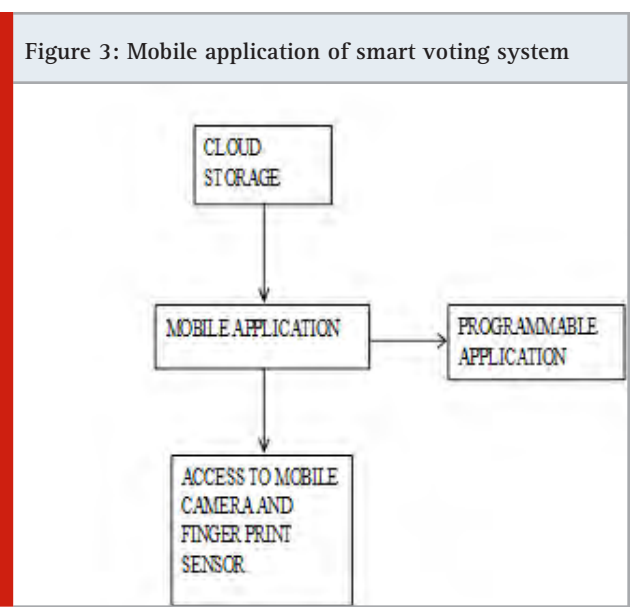
Figure 3: Mobile application of smart voting system

The above image clearly explains about the source of the mobile application of smart voting system. It is mainly access to mobile camera and finger print sensor which is directly connected from the mobile application. By the implementation of the system the total number of votes poled is increased with the increase of security in poling and thereby prevent the fake vote.

C. Software requirements

Android: Android is nothing but a mobile operating system. It is a modified version of the Linux kernel and other open source software. Android is designed for mobile touch devices such as phones and tablets. It was developed by the developer Consortium which is known as the Open Handset Alliance.

Memory management: Android devices typically use battery power, it is designed to manage processes to make it energy consumption to a minimum. Android manages programs stored in memory automatically, when the memory is low, the android system will automatically shut down malicious processes and it will be inactive for a long time.

ARM is the main platform for Android. Layouts of ARM are (ARMv7 and ARMv8-A layouts), x86 and x86-64 are also officially supported in the latest versions of Android. ARMv5TE and MIP32 / 64 architecture are removed from the latest Android release. Starting in 2012, Inlet processors are included in android devices. Android was first implemented on 64-bit x86 and then ARM64. Starting with Android 5.0 "Lollipop", supported over 32 variants.

Figure 4: Android's architecture diagram

D. Hardware requirements: The hardware requirements used are Arduino UNO, step down transformer, Bio metric sensor, LED display and Proteus application. Arduino UNO, step down transformer LED display are the common hardware part that have been seen in every projects. In this project it has been mainly concentrated with biometric sensor and Proteus applications.

Biometric Sensor: Identification of security and authentication is done with the help of biometric sensor. These devices use automated methods to verify or recognize the identity of a person based on ethical standards. The features such as fingerprint, iris, facial

images and voice recognition are done in biometric devices. Fingerprint sensors are available on android devices such as mobiles, tablets etc. To unlock the device and some authorize actions as money transfer can be done with the help of fingerprint sensors. It can be used to prevent the device from being used by an unauthorized person.

Physical characteristics are related to body composition. The traditional methods used are token based system in which this system includes in driving license, passport and information based identification system which uses password or an identity number. While comparing token based system biometric system is one of the unique method in which each human consists of unique characteristics of finger print, iris , facial images etc. Biometric identifiers are far more reliable then token based system. And biometric identifiers raises privacy of each human.

Figure 5: Biometric sensor

Proteus Applications: Assembly language is the only language in which microcontroller can understand. Microcontroller consists of assembly language and assembler. Assembly language refers to the set of rules used to write the program and the assembler is used to convert the assembly language into zeros. The integrated system is also called Machine Code.

Figure 6: Proteus applications

Proteus is a software developed by Lab Center Electronics for electronic circuitry, scheme capture and PCB construction. It is simple and user-friendly. Microcontrollers and microprocessors mainly uses Proteus as the main digital simulation.Can mimic LED, LDR, and USB Communication etc.

RESULTS AND DISCUSSION

A mobile application is developed which has support for both android and IOS. This mobile application should be enabled with the permission to get access with mobile camera(Front and Back), mobile finger print sensor. Every user can able to login to this application with his/her AADHAR number.

By logging in to this application this application need to match with his/her finger print and face id, which is verified through with our AADHAR detail. If it match perfectly individual person can poll his/her vote.

This mobile application can be accessed only on the day of voting. Finally the number of person who has voted is displayed in the application itself and the individual party's vote percentage is displayed in the application itself.

Figure 7: Hardware implementation and result
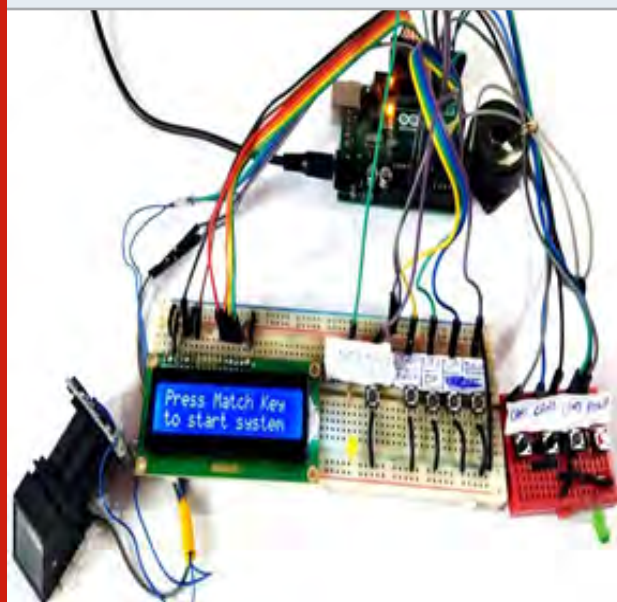
CONCLUSION

The proposed method is to build a Smart voting system using finger print recognition technology that allows any voter in India to cast the vote to their respective constituency from anywhere in India by going to their nearest voting booth in the place of stay. This smart voting system based on biometric recognition is developed in which it overcomesall the drawback which is in current voting system. This proposed system has many strong features like security, correctness,

convenience,verifiablitiy etc. This system does not requires any election officer, paper ballot or any EVM.

Only fingerprint scanners and internet connections are required and this system is secure. The proposed system provides Fingerprint authentication. In this system no voter can vote twice because the voter Fingerprint patterns will be linked to their Aadhaar Card. So that any user tries to vote twice is not possible in our proposed system since we are using fingerprint authentication. Also the proposed method provides the voter to vote from any region with in India to their Residential Constituency from the nearest Voting Booth with a secure voting process without neglecting to vote

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Finishing House Cutters and Sheeters Speed Efficiency Indication in Paper Industry

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ABSTRACT

In paper industry Finishing House (FH) area comprises of many sheet cutters for processing Paper Reels into cut sheets of various chopping length as required. Those cut sheets are processed as Ream bundles in Ream Finishing area. The finished ream bundles are shrink wrapped in Shrink Wrapping Machines and stored in Automatic Storage and Retrieval system. The purpose of this study is to provide speed efficiency (Yield) in percentage with reference to its target speed and chopping size for sheet cutters. The Speed Efficiency & Day Average Speed Efficiency in percentage values shall be calculated using the respective machine data. The design of this system includes the acquisition of speed efficiency signals from sheet cutters and the display of Speed Efficiency data in WINCC SCADA/ HMI Station at Shift Engineer's room. The idea behind this Project was to analyze the capacity utilization of FH Cutters & Sheeters and thereby to enhance its Productivity.

KEY WORDS: CUTTER, SHEETER, PLC, HMI

INTRODUCTION

In paper industry, the final stage of the paper making process is the finishing house area. It consists of number of sheet cutters which cuts the paper into ream bundles of required size. The finished ream bundles are shrink wrapped and stored in automatic storage and retrieval place. The cutter and sheeter machines efficiency are calculated using the formula,

Speed Efficiency % (X) = (Actual Machine running speed/ Target speed for the respective chopping Size)*100

Day Average Speed Efficiency = $0\int t$ Speed Efficiency (X) / $0\int t$ lapsed time (T)

The productivity of the paper industry is increased by continuously monitoring the efficiency of the sheeter machines. If any deviations in the fixed percentage, then the speed of the cutter is normalized to enhance the productivity of the chopped paper into required sizes like A4 or Folio. This project is implemented in a paper industry in a finishing House which comprises of Sheet Cutter#1, Sheet Cutter#2, Sheet Cutter#3, Bielomatik#1, Bielomatik#2, ECH Will cutter and Pasaban Cutter.

MATERIAL AND METHOD

The signal converter converts the analog input (Aravindaguru et al.2019) signals of the various available cutters into digital output signals. It converts the signals into industrial current signals. The PLC used is Siemens made and it acquires digital input from the remote I/O unit (Kiruthika et al. 2017) The data is communicated through

the industrial Ethernet and Profibus.The profibus links the controllers with the field devices such as sensors. Industrial Ethernet provides the real time control in the industrial environment. All the data from the field is communicated to the operator's room. Each cutter and sheeter are provided with one LED display at its location.

Figure 1: Architecture of Cutters and Sheeters Speed Efficiency Indication Unit
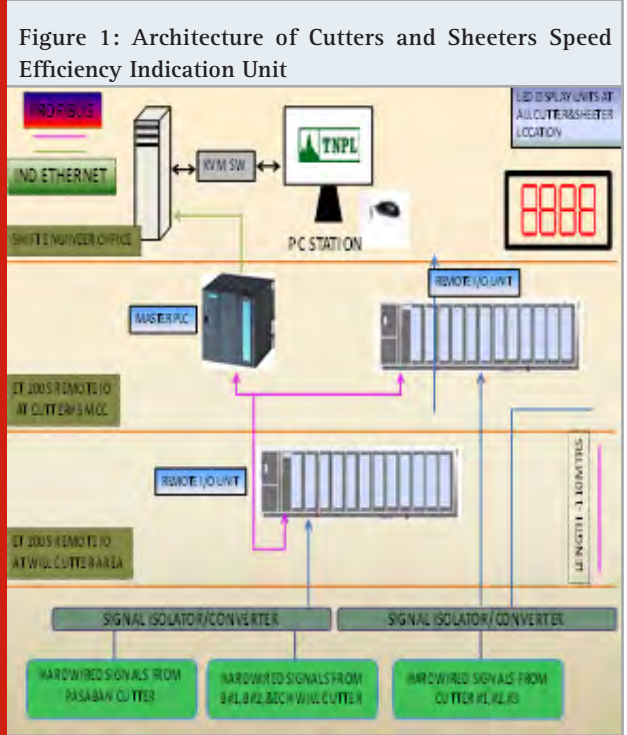
A. Human Machine Interface: The HMI (Human Machine Interface) is the visualization of the real time system. It increase the communication between the operator and the machine in terms of computer screen, touch screen or micro panel display. In the manufacturing industry HMI is a Graphic User Interface(GUI).In HMI there are various forms of monitoring and controlling of machine data connected real time. The machine controller in HMI is usually in the form of buttons or sliders which replaced the hammers or manual switches. The HMI is also used as a display device for displaying the machine data in the control room (Setiawan et al.2019).

B. Programmable Logic Controllers: A Programmable Logic Controller is a digital computer which is used for automating the industrial processes. The Inputs come from sensors that physically translate into electrical signals (Gavali et al.2014). The simplest form of inputs are digital. The PLC is a digitally operating device (Kiruthika et al.2018). It stores the program in its memory and is executed in three ways such as ladder logic, sequential statements and functional blocks. The advantages of using PLC in complex industrial processes are cost effective and flexible(Monisa et al.2019).

RESULTS AND DISCUSSION

The machine data is collected for individual cutters and

sheeters. Initially the LED display unit is being calibrated. Machine data is collected such as various chopping length, the target speed for the corresponding chopping length and are tabulated.

Table 1. Cutter #1 and Cutter #2 Target Speed vs Chopping Length			
Chopping Length in mm	Target Speed in m/min	Chopping Length in mm	Target Speed in m/min
500	150	800	240
550	165	850	255
600	180	900	270
650	195	950	285
700	210	1000	300
750	225		

Speed Efficiency logic modification work was carried out in PLC by considering the Target Speed design data. The calculated Speed Efficiency Values were verified at various Machine speeds and provided in HMI. Snapshots of logic development and Speed Efficiency values displayed in HMI are shown below.

Figure 2: Cutter #1 Logic Development
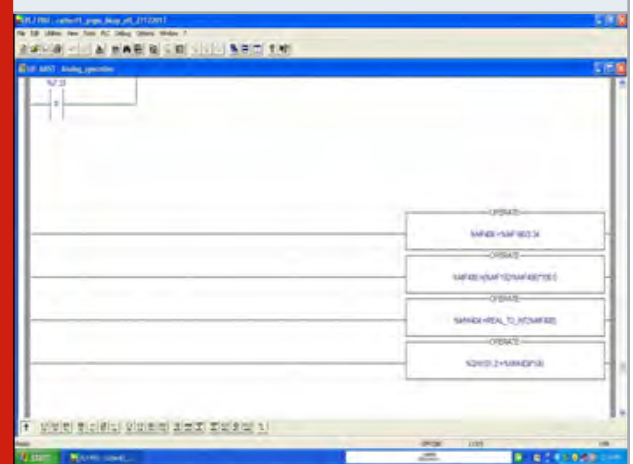
Figure 3: Cutter #1 Speed Efficiency Indication in HMI
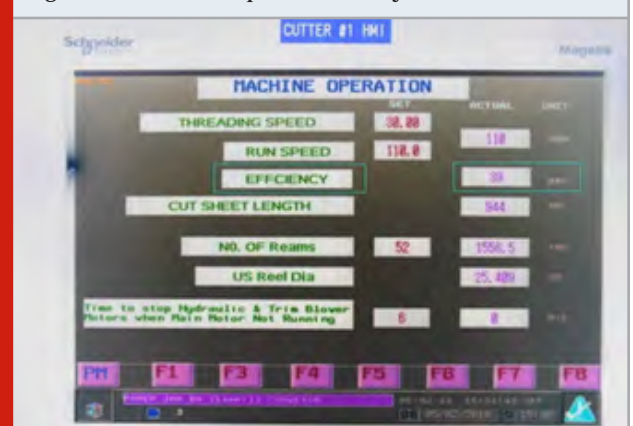
Figure 4: Cutter #2 Logic Development
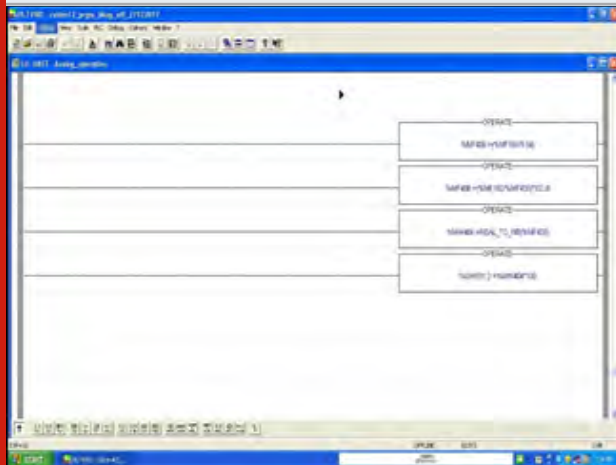
Figure 6: Cutter #3 Logic Development
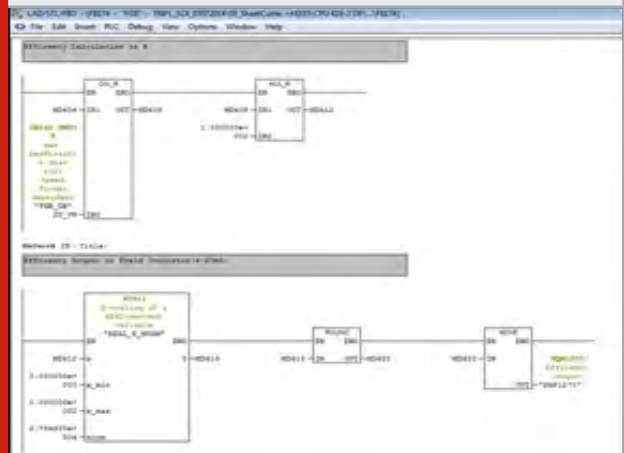
Figure 5: Cutter #2 Speed Efficiency Indication in HMI

Figure 7: Cutter #3 Speed Efficiency Indication in HMI

Figure 8: LED Display of efficiency indication in %
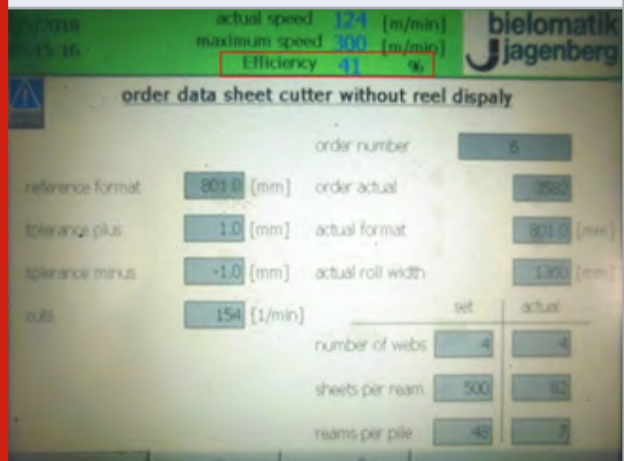
Table 2. Cutter #3 Target Speed Design Data for Chopping Length

Format Length in mm	Cross cutter Target Speed in m/min	Format Length in mm	Cross cutter Target Speed in m/min
380	95.30	723	289.40
401	102.35	750	300
426	111.80	775.10	300
450	121.20	801	300
475	130.60	825	300
380	95.30	723	289.40

Bielomatik#1 Speed Efficiency percentage value was obtained from sheeter area Main Motor VFD with the help of Electrical Department. The Speed Efficiency percentage values were verified with various Machine speed. Necessary provision was made to install LED display unit.

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The Programmable Logic Controller (PLC) and its allied components were installed in Cutter#3 MCC room. Signal cables were laid from Cutter#1, Cutter#2 &Cutter#3 to Main PLC Controller unit at Cutter #3 MCC in Phase#1. PC Station is installed at Shift Engineer's room to display the Speed Efficiency percentage values.

Application software (WINCC) and Graphic Display Page work to display Speed Efficiency percentage values in PC Station were developed and programmed. The Speed Efficiency signal acquired from Cutter#1, Cutter#2 & Cutter#3 is displayed in the PC Station. A separate Junction box with Remote I/O Hardware was installed at Will Cutter area to acquire signals from B#1, B#2, and ECH Will Cutter & Pasaban Cutter in order to save cabling cost and to ensure reliable signal transmission. Functional checks of all remote I/O hardware were completed. Profibus communication was used to link remote I/O hardware with the Main PLC controller commissioned at Cutter#3 MCC room.

Figure 9: Bielomatik #2 Logic Development

Figure 10: Bielomatik #2 Speed Efficiency Indication

The similar procedure was conducted for ECH cutter, Pasaban Cutter and other Bielomatik cutter. The signal by conventional means (4-20mA) through signal boosting hardware (Dual Channel Isolators). Cable routing plan for Profibus communication cable to link remote I/O unit & signal cable to acquire Pasaban cutter signal. PLC programming was done to process the Speed Efficiency signals received from B#1, B#2 & Will Cutter. Graphics Pages were designed to display the Cutter#1, Cutter#2,

Cutter#3, B#1, B#2 & ECH Will Cutter Speed Efficiency Values in %.

Figure 10a: Efficiency Screen at Finishing House Operator's Room

Figure 11: Data Collection at Operator's Room

Figure 12: Efficiency Comparison

CONCLUSION

Thus the speed efficiency calculated using the formula and displayed in the shift operator's room in LED display for the cutters and sheeters in the finishing house. The day average speed efficiency was calculated for the present and previous days were compared. From the data the capacity utilization (Yield) of cutters and sheeters was calculated and thereby enhanced the productivity of the process.

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Investigations on Optical and Electronics Properties of Synthesized Graphene

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ABSTRACT

The chemical synthesis of nanostructured materials are attracted towards electronic and optoelectronic applications. The Graphene Oxide was prepared by one of the principle methods of a time-saving improved Hummer's method. The formation of Graphene Oxide were confirmed by a Fourier-Transform Infrared spectroscopy (FT-IR). The Graphene can be produced from the pencil graphite. Graphene Oxide is an unique material noted as a single monomolecular layer of graphite with various oxygen- containing functional groups such as carbonyl and hydroxyl. The formed reduced graphene oxide resembling graphene but contains residual oxygen as well structural defects, this process is done when the Graphene Oxide is reduced. The Scanning Electron Microscope characterizes the microscopic morphologies of the sample. The Fourier Transform Spectroscopy is used to measure the structure of the samples or materials and also it is used to certify the existence of oxygen-containing functional groups. Comprehensive characterizations of the properties of Graphene Oxide films were conducted. In this preparation Graphene Oxide (GO) is used as a material in the solar cells. Graphene has the high electrical conductivity, and chemical stability. The confirmed sample is used to take the Ultraviolet spectroscopy (UV), Scanning Electron Microscopy (SEM), Current Voltage (IV) characteristics of Graphene Oxide is attained.

KEY WORDS: FOURIER TRANSFORM INFRARED SPECTROSCOPY (FT-IR), GRAPHENE OXIDE(GO), IV CHARACTERISTICS, ULTRAVIOLET SPECTROSCOPY (UV), SCANNING ELECTRON MICROSCOPY (SEM), HUMMER'S METHOD.

INTRODUCTION

The global concerns in the development of human civilization and the technological issues of energy uses and environment protection are facing many issues. These days the enormous amount of energy demands in the world are met by the nonrenewable energy sources and fossil fuels (Gowthami R et al.2019).

To replace these nonrenewable energy sources, need of the renewable energy sources and clean energy sources and carriers, including batteries, super capacitors, hydrogen storage has become more important. The optical conductivity of graphene oxide is determined through range of spectrum (Y.Zhu et al.2010).

Graphene Oxide is a single layer of graphite oxide, which is produced from exfoliating the graphite oxide in water through disrupt and it produces multilayer or mono layer of graphene called Graphene Oxide. (T. Kuila et al.2010) The graphene has the existence of various oxygen groups mainly of functional groups which enable Graphene Oxide an interesting property. The production of high efficiency monolayer graphene sheets appropriate for

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electrical and optical properties. (Kiruthika S et al.2019) The epoxy and hydroxyl groups on Graphene Oxide, it made surface act as an effective sites to immobilize multi active species. It has tunable electronic properties. (C. Lee et al.2008) The intrinsic strength report the structural and mechanical application of the graphene.

Typically, GO is often considered as an electrical insulator, because it contains the bigger portion of sp3 hybridized carbon atoms which is connected with oxygen groups. (Niyogi et al. 2016) Whenever the graphene oxide films deposited on any substrate and later the insulator property is converted into an electrical conductor. The reduction of graphene oxide (rGO) can be reduced by various orders of magnitude to make graphene like semi-metal (S. pei et al.2012). Graphene Oxide can be produced by one of the principle methods developed by Hummers.There is in need of energy storage in industries to meet with the higher production rates.

Figure 1: Graphene
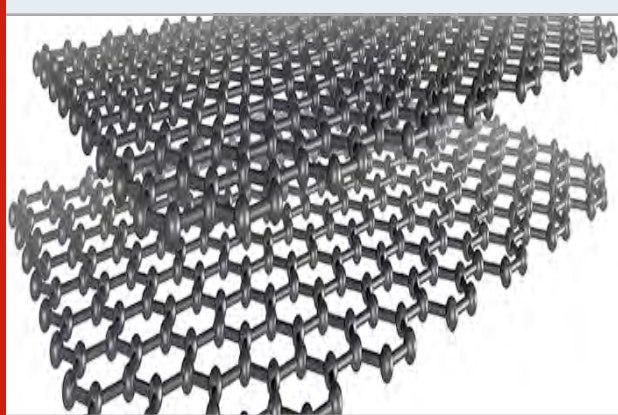
MATERIAL AND METHOD

A Chemicals: Graphite powder, Sodium Nitrate (NaNO$_3$), (Hydrogen peroxide)H2O$_2$,Potassium Permanganate(KMnO$_4$), Concentrate Hydrochloric acid(HCL), were added.
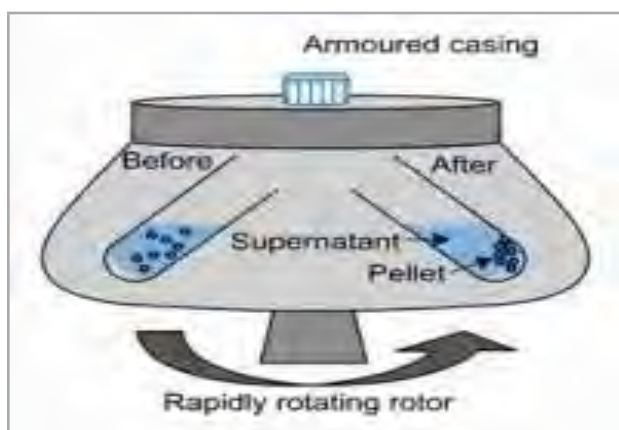
B Graphene oxide by Hummer's method:

Figure 2: Process flow diagram
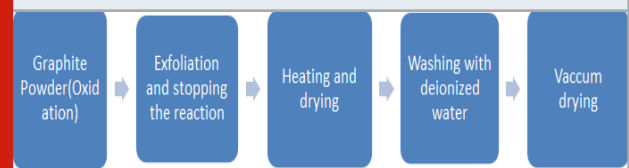
Graphene oxide was prepared from the pencil in the form of graphite powder using Hummer's method (Sohail et al. 2017). In this method some chemicals were added to get graphene oxide from graphite powder. (Hawraa H.Radey et al.2018) .In detail one gram of graphite powder is measured and mixed with 0.5g sodium nitrate, then add the concentrated Hydrochloric acid of 23ml are taken in a ice bath. These mixtures are stirred for 30 minutes. After that gradually add KMnO4 to the solution prepared (Veeramani P et al.2019).

The mixture is heated in a hot plate about 95oc for 15 minutes and slowly add H2O2 (23ml) with H2O (80ml). Then make the above mixture to settled down for 6 hours. After the 6 hours the graphene is sedimented.

Figure 3: Centrifugation process

Figure 4: FT–IR
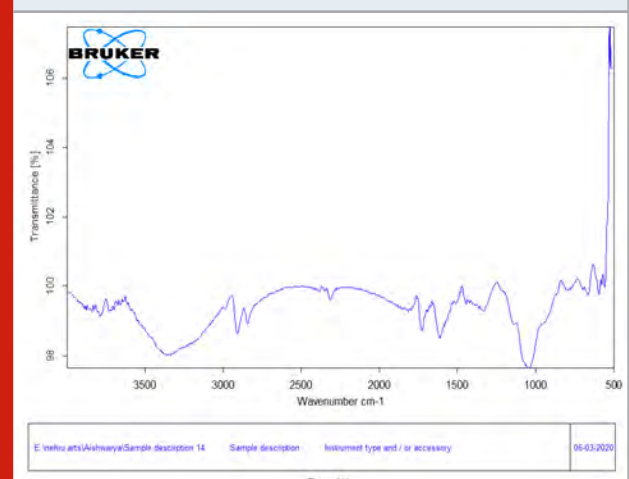
The resulting mixture is washed with deionized water followed by centrifugation (Monisa S et al.2019) at 1000 rpm for 10 minutes and let the mixture to dry. Thus we obtained the graphene oxide sheets.

RESULTS AND DISCUSSION

The synthesized Graphene oxide GO are characterized and analyzed by Fourier Transform Infrared Spectroscopy (FTIR), Ultraviolet spectroscopy (UV) for absorbance, Scanning Electron Microscopy (SEM), Current Voltage (IV).

FT-IR analysis: Fourier Transform Infrared Spectroscopy (FT-IR) is one of the technique used to obtain the spectrum of absorption, emission and photo conductivity of the sample like solid , liquid, gas (paulchamy et al. 2015). This technique is used to investigate the bonding interactions in graphene before and after the oxidation process. The sharp peak found at 1615 cm-1 is a resonance peak.

UV Spectroscopy: The absorbance of graphene oxide is characterized by the technique called ultra violet spectroscopy. (Nangamso Nathaniel Nyangiwe et al. 2015) There is a linear relationship between absorbance and absorber concentration which makes UV spectroscopy.

Figure 5: UV Spectroscopy
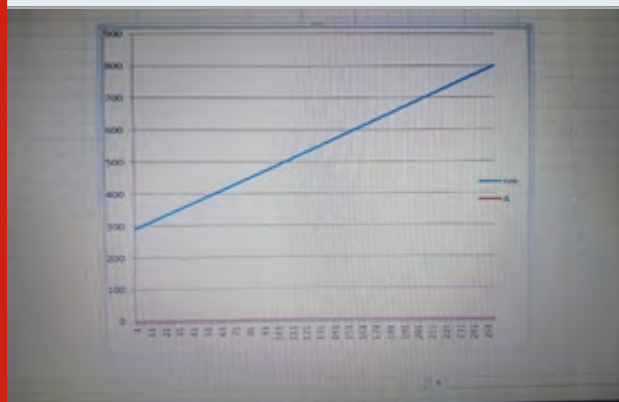
SEM analysis: Scanning Electron Microscopy is a technique to observe the structure of sample graphene oxide. (Paulchamy et al.2015) This shows the SEM images of exfoliated graphene oxide is under 0.1mm.

I–V characteristics: The I-V characteristics curve shows the relation between the current passes through the electronic device and the voltage occurs in their terminals. This characterization is to verify the electrical conductivity (B.M. Yoo et al. 2014) of the sample Graphene Oxide.

CONCLUSION

Thus Graphene oxide was produced by the principle method, Hummer's method was the simple method for synthesis. In this the functional group of the sample is determined by the FT-IR analysis. The absorbance was determined by the UV- spectroscopy. Also the exfoliation of the graphene was observed by the SEM analysis and the conductivity property was confirmed by the IV characteristics. Thus the synthesized Graphene Oxide has many unique properties and be applied in wide variety of application.

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Library Assistant Using Firebird V Robot

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ABSTRACT

This paper demonstrates about the assistance of Firebird V Robot in library management. A robot is structured that follows a defined line which is previously stored to Track and take the book from rack and keep the book in concerned spot precisely. The book, which is to be taken, is given utilizing RFID. Robot perceive information of book by contrasting the spared RFID number and the books in the racks. On the off chance that the robot coordinated with the spared book detail distinguishes the specific book, at that point the robot will take the book with the arm joined to it and spot it in the conveyance box. When the client restores the book, it will take the book from returning box and spot it in a similar rack where the book was taken previously. This aides and improves furthermore decreases the manual routine work done by the library staff. The system acts as a basic platform for the generation of more such devices for the library management. The implementation of the robot end section in PROTEUS was successful. The desired results were verified in the simulation. The IR sensors navigated the robot end from its home position to the book shelf end and back to home after the collection of required book. it reduces the manual work.

KEY WORDS: RFID, TRACK, DELIVERY BOX, RETURNING BOX, SHELF.

INTRODUCTION

The Libraries are the wellspring of information and astuteness, yet with the expanding instruction branches and new researches, millions of the books are being added to libraries. Manual arranging and position of these books in racks is a tedious and bulky procedure for people. This frequently brings about erroneous position of books on shelves. Consequently individuals think that it's hard to find the book in light of the fact that the specific area of book returned by the database contrasts from its current area. In this manner, an effective and programmed book situation framework is required to encourage the people in finding the ideal book in a brief timeframe. In this paper, Robot is used to track, deliver and return books based on barcode scanning in library. It is mainly focused on the book detection and reducing the human work [1-3].

MATERIAL AND METHOD

In the section below, different searching methods [shown in figure 1] are discussed in detail.

A. Manual Process: It is one of the most established method. Library contains a great many books, which are most of the time taken and returned back to the racks. In the event that there is a need of book by a client, Library

staffs first need to perform rack perusing, i.e., physically look for books, distinguish and convey to the client. After return, again need to put in right position [4].

Figure 1: Book searching methods
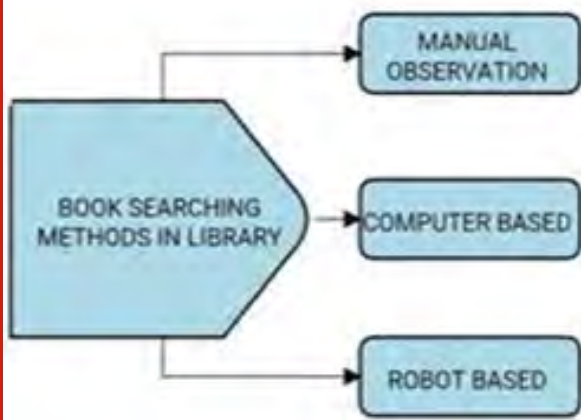
B. Computer Based process: Here librarian have the option to look through books by their title, writer, and subject classification in the system. Each book will have a one of a kind distinguishing proof number and different subtitles including a rack number, which will help to find the book. After identification, the librarian should take the book and give it to the customer [5].

C. Robotic Process: Robotics is a key innovation in the advanced world. Robots have stepped into enterprises and medical clinics, and have seen staggering achievement in planetary exploration. This Robot is centered around the book searching which less human work [6][10-11].

Figure 2: Atmega2560 Based Robot [Wikipedia]
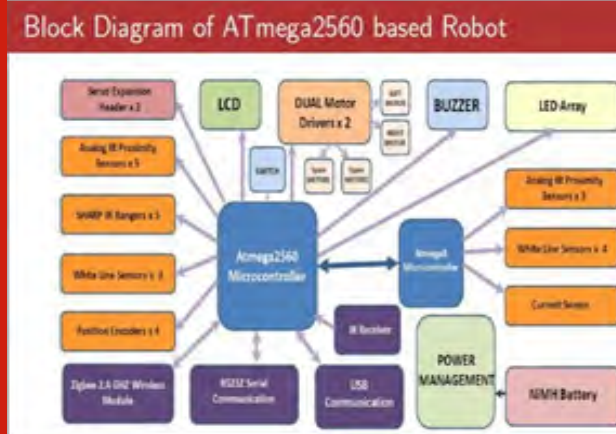
D. Firebird V Robot: Fire Bird V robot [shown in figure 3] is a microcontroller based robot. The guideline utilized here is Open Source Philosophy its product and equipment is compatible with some other programming like Keil, Matlab, and LabVIEW. It is the fifth server robot, the name FIREBIRD V robot. It utilizes 2 at mega controller, one act as a master and other as slave.

Atmega 2560 [shown in figure 2] is a master controller and Atmega 8 is aslave controller .The essential parts in this robot is IR sensors, close sensors, white line sensors, SHARP IR sensors, bells, LCD and LED alongside Ni-MH battery. The two Atmega controllers are the master control is the Atmega 2560 and the slave control is the Atmega 8 controller [7-9].

E. Robot Tracking Process: The equipment is actualized as a robot unit [shown in figure 4] and shelf unit. Connect robot and smart phone using bluetooth. Enter the name of book, which you want in the mobile keypad. In the event of getting the command, the robot begin moving along the white line track and arrives at the rack end. The IR sensor matches with the rack unit. The RF per user examines for the RF tag and matches with the comparing book, which the client enters. Here the robot will stop.

F. Returning Process: On the off chance that both the robot and the rack end get synchronized the robot arm rotates in particular degree according to the shelf position, which has been coded already and put the book into the robot basket and place it in the delivery box,

Figure 3: Block diagram of Firebird V Robot
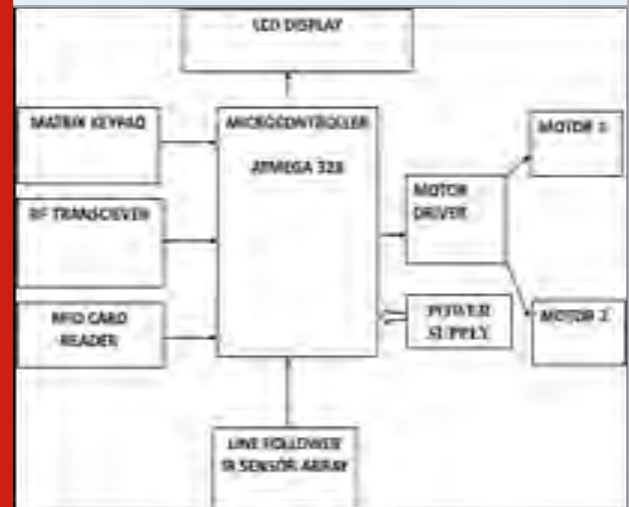
Figure 4: Block diagram of Robot
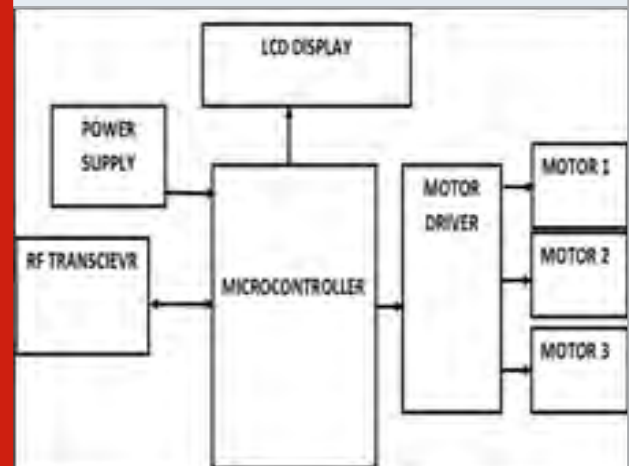
RESULTS AND DISCUSSION

CASE 1: Robot Connects with Bluetooth: Connect the robot and smart phone using bluetooth app. Enter the name of book which you want in the smart phone app [shown in figure 5]

Figure 5: Person selecting the book using mobile app
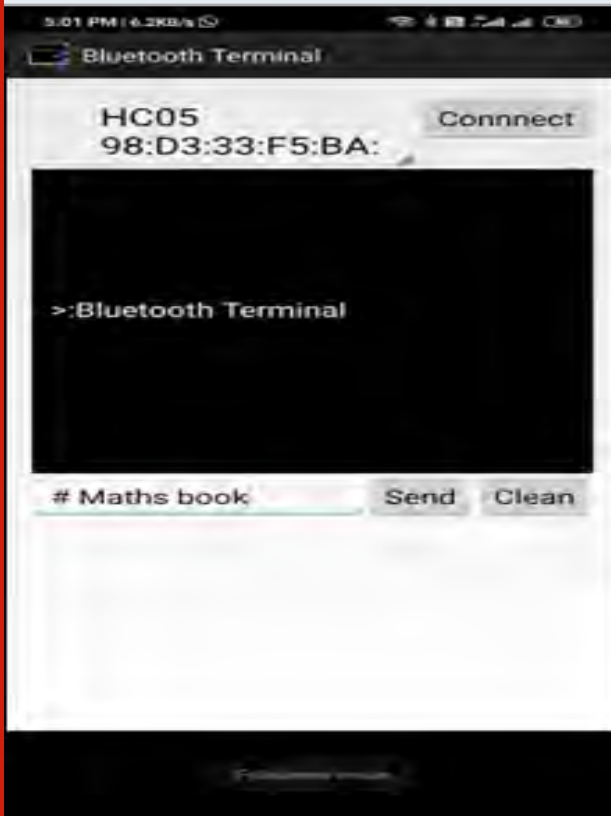
CASE 2: Robot Starts Tracking: After receiving the command, the robot start moving along the white line track and arrives at the rack end. The IR sensor matches with the rack unit. The RF filters for the RF tag and matches with the relating book [shown in figure 6].

Figure 6: Robot follows white line
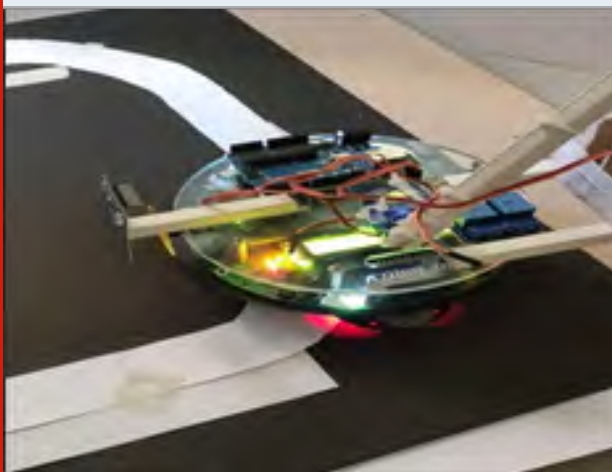
CASE 3: Robot Arm Picks up the Book: If robot and the book in shelf get matched the robot arm rotates in particular degree according to the shelf position which has been coded already and picks up the book [shown in figure 7]

Figure 7: Robot picks the book

CASE 4: Robot Drops the Book: Robot put the book in its basket and then place it in delivery box, which will be taken by the client. The robot will station at the home until the following cycle starts. The robot is prepared for the next command from the client [shown in figure 8]

Figure 8: Robot drop the book in basket

CONCLUSION

This project is an effective system for automatic library manipulation, it reduces the manual work. The system acts as a basic platform for the generation of more such devices for the library management. The implementation of the robot end section in PROTEUS was successful. The desired results were verified in the simulation. The IR sensors navigated the robot end from its home position to the book shelf end and back to home after the collection of required book. it reduces the manual work. The IR sensors navigated the Robot end from its home position to the book shelf end and back to home after the collection of required book. It decreases the manual work. With the proposed engineering a framework created, it

will go about as a fundamental stage for the age of all the more such gadgets for the library.

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Pick and Place Robot Using Microcontroller

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ABSTRACT

Many robots are built for manufacturing purposes and can be found in factories around the world. The idea behind this project is to reduce human efforts, especially in the manufacturing industry. The project will include the development of pick and place systems in plastic material molding companies. The robot is equipped with sensors to detect work pieces. Using software program is written in assembly level languages, then program was downloaded to the robot's microcontroller, AT89S52 from Atmel. The mechanical design has three major movements which are used to pick and place objects. For pickup the plastic materials vacuum clipper is used, vacuum is created with the help of vacuum pump it's was working with lead screw mechanism. IR sensor is used to positioning the motor with our program what we given to the controller. The handling capacity of the robot is 5 kg. In constructing robot motor plays an important role as to give movement, here DC motors used for movements. Relay act as a driver for DC motor. The robot that was programmed will pick and place with moulding machine sensor signal.

KEY WORDS: MICROCONTROLLER, ATS8952S, MACHINE ROBOT, UA741.

INTRODUCTION

Word robot was coined by a Czech writer Karel Capek in a 1920 play titled Rassum's Widespread Robots (RUR). Word "robota" in Czech could be a word for non specialist or hireling who means "drudgery", "servitude", or "constrained labour". A robot may be a reprogrammable, multifunctional controller planned to move fabric, parts, apparatuses or specialized gadgets through variable modified movements for the execution of a assortment of tasks. -Robot Organized of America, 1979. A robot is an independent antique that gets data by sensing the world around it and employments the data to control its environment to realize objectives. Robot detecting incorporates vision, sound, touch, and others. Manipulation includes the utilize of specialized toois and adroit control. Robots ojien have the capacity to alter their areas within the world (movement). Robots are man-made mechanical gadgets that can move by themselves, whose movement must be modeled, arranged, detected, incited and controlled. Whose movement behavior.

Robots are based on "Artificial intelligence" in case they succeed in moving in secure interaction with an unstructured environment, whereas independently accomplishing their indicated assignments. Based on the definition of robot, it can be concluded that a robot must be an programmed machine and ought to be able to bargain with the changing data gotten from the environment. Indeed the foremost complex mechanical framework can be broken down into a number of essential components, which give an diagram that how a robot works. These components are controllers,

controllers, actuators, engines and control supplies. Robots can be classified in different ways, depending on their components, arrangements and employments. To begin with Commercial Robot named as Unimate was created after 1950. The Unimate was introduced at a Common Engines plant to work with warmed die-casting machines.

II. CONTROL CIRCUIT DESIGN

Machine Robot: For control operation there are various methods like PLC (Programmable logic controllers), Microcontrollers, Microprocessors and digital signal processors. Here we are selecting microcontroller as a CPU (or as a brain of our robot) due to low cost, easy availability, easy to program and better performance. The supporting components like sensors are used for positioning and relay acts as a motor driver.

Figure 1: Block diagram for electrical design Microcontroller
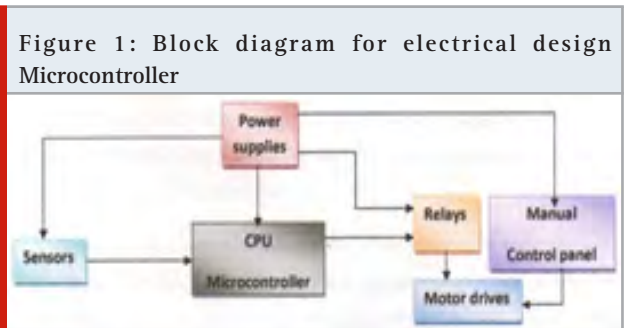
Microcontroller: Microcontroller could be a advanced IC that can perform operations with what we provide a program to its ROM. Compare to typical IC it has major advantage like typical IC can perform as it were operations what they fabricated for but microcontroller can perform as our craved operation only the condition is that we ought to deliver program to its streak memory. Essentially the microcontroller comprises of chip and in expansion it has built-in ROM, Slam, I/O gadgets, clocks and counters. The microcontroller is exceptionally reasonable one for implanted applications. There are different microcontrollers accessible in advertise like ATMEL, MICROCHIP (PIC) AVR, ARM, and RENESAS etc.

Figure 2: Micro controller
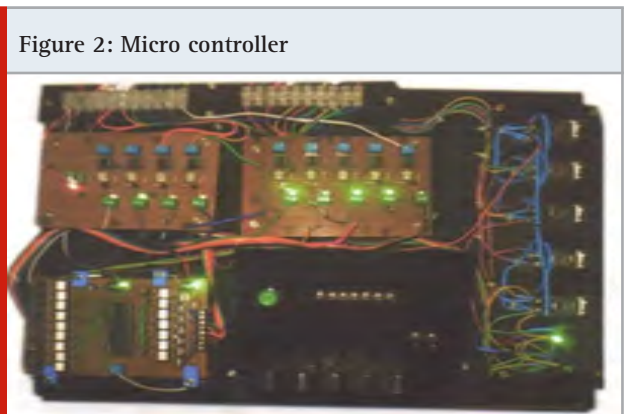
AT89S52: The AT89S52 can be 8K bytes of system programmable streak memory with a low-power, high-performance CMOS _ 8-bit microcontroller. The gadget is built using Atom's high-density volatile memory innovation and is compatible with the industry-standard 80C51 instruction set. The on-chip streak program allows memory to be re-managed by an in-frame or custom non-memory memory software engineer. By combining flexible 8-bit CPUs with programmable streaks in the monolithic chip, the ATML AT89S532 is an efficient microcontroller, providing a highly flexible and cost-effective system for many implanted control applications.

The AT89S52 takes after standard highlights: 8K bytes streak, 256 bytes slam, 32 I / O lines, guard dog clock, two information points, three 16-bit timers / counters, a six-vector two-tiered barrier design. , Full-duplex serial harbor, on-chip oscillator and clock circuitry. In detail, the AT89S52 Bolster is programmed with zero repetition and passive logic for the operation of two programmable control sparring modes. Sitting out of gear mode prevents the CPU, while allowing slams, timers / counters, serial harbors and interrupts to work. The power-down mode relieves the slam conversation, but reinforces the oscillator, desalting all other chip capabilities until another interrupt or device is reset.

Figure 3: AT89S52
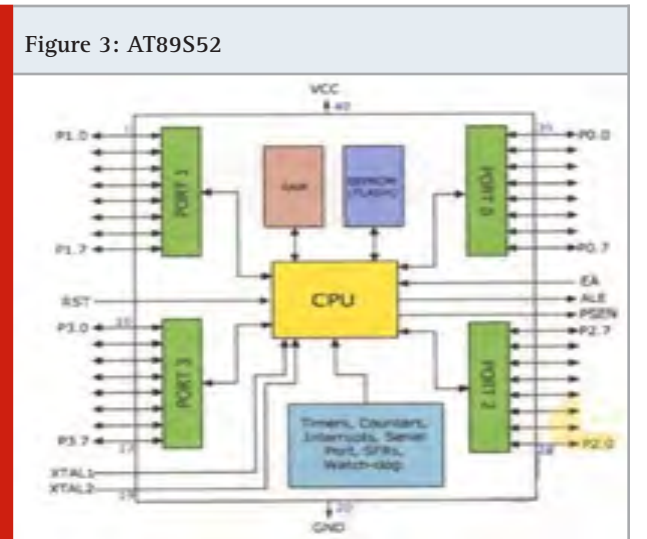
For the reason of setting the robot, we are utilizing sensors (infra ruddy) which has IR emitter & recipient (TIL 81). For comparing the yield, an op-amp IC is utilized (i.e. UA 741). Depending on the sensors yield microcontroller faculties the position of the robot and drives the engine concurring to the program.

Sensor Positioning: There are totally 9 IR sensors used for the positioning the robot. The sensors are arranged at the different part of the robot which can be seen in the below shown figure.

Figure 4: Sensor positioning
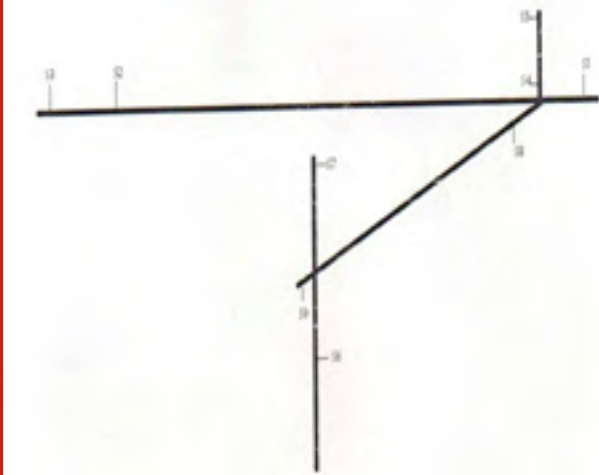
UA 741: The UA741 may be a tall execution solid operational speaker built on single silicon chip. It is designed for a wide extend of applications like Summing enhancer, Voltage supporter, Integrator, Dynamic channel Work generator. The tall pick up and wide extend of working voltages give predominant exhibitions in integrator, summing speaker and common criticism applications.

Figure 5: UA 741
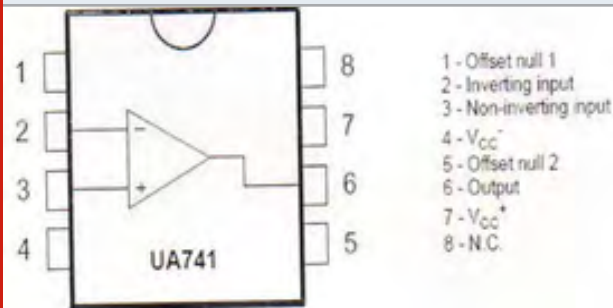
Relay: A hand-off is an electrical switch that opens and closes beneath control of another electrical circuit. Within the unique frame, the switch is worked by an electromagnet to open or near one or numerous sets of contacts. It was designed by Joseph Henry in 1835. When hand-off coil is energized, the hand-off works to open or near its contacts or to open a few contacts and near others. Contacts which are opened when energized are called "Normally Open" (NO) or basically open contacts. Contacts which are closed when energized are called "Normally Closed" (NC) or basically open contacts. Normally-open contacts interface the circuit when the transfer is actuated; the circuit is detached when the hand-off is dormant. It is additionally called shape a contact or makes contact. Normally-closed contacts detach the circuit when the transfer is enacted; the circuit is associated when the hand-off is inert.

Automatic/ Manual Control Operation: One more feature for our robot is manual operation. In some situations like maintenance, cleaning, repairing and other some unexpected breakdowns use to arise so the manual control operation is added. The figure is shown that automatic/manual control panel.

Figure 6: Automatic/ manual control panel

Power Supplies: In AAG PnP 2.3 there are Snos. of motors where two are 12V and three are 24V, 7 nos. of 12V relays, 9 sensors (SV) and microcontroller (SV). For that totally five regulated power supplies are designed with the help of IC's (7812 & 7805). Totally three transformers are used, rated as 24V/S5A & 12V/2A & 6V/1A.

Programming: Programming for microcontroller is done utilizing ordinary machine level dialect. The program is appeared underneath. Microcontroller may be a common reason microcomputer. The microcontroller is the brain of the robot but not like human brain since human can think and do anything but the human made gadgets cannot think; as it were they can do the specific work by the command given by us. In AAG PnP 2.3 the micro-controller 8051 is utilized to respond like robot brain. Hence the commands or program for a robot is much imperative. So the programming of the robot is included here. This framework is additionally called as implanted framework.

A framework is way of working, organizing or doing one or numerous errands concurring to a settled arrange, program, or set of rules. A framework is additionally an course of action in which all it is units gather and work together agreeing to the arrange or program. An inserted framework is one that has computer equipment with program inserted in it as one of its most important component. It may be a committed computer based framework for an application or item. It may be either an free framework or a portion of a bigger framework its program more often than not implants in ROM (studied as it were memory), it does not require auxiliary memory as like a computer.

$mod51
Org 0050

```
mov p2,#00H
main: jb p3.1,S ;Check machine input
Lcall delay
setb p2.0 ;motor 3 is on(in downward)
Loop: jb p1.5,S ;check sensor 6
Lcall delay
clr p2.0 ;motor 3 is off
setb p2.6 ;motor 4 is on(in upward)
setb p2.3
Lcall delay1 ;call delay function
Leall delay1
clr p2.3 ; motor 4 is off
clr p 2.6
setb p2.2 ;motor 1 is on (forward)
LOOP1 jb p1.2,S ;check sensor 3
Lcall delay
 clr p2.2 ;motor 1 is off
setb p2.1 ;motor 5 is on(catch)
LOOP2: jb p1.3,S ;check sensor 4
Lcall delay
 clr p2.1 ;motor 5 is off
 setb p2.5 ;motor 1 is on(reverse)
 setb p2.2
LOOP3: jb p1.1,S ;check sensor 2
 Lcall delay
clr p2.2; motor 1 is off
setb p2.0 ;motor 3 is on(in upward)
LOOP4: jb p1.6,S ;check sensor 7
Lcall delay
clr p2.0 ;motor 3 is off
setb p2.2 ;motor 1 is on(reverse)
LOOP5: jb p1.0,S ;check sensor 1
Lcall delay
 clr p2.2 ;motor 1 is off
 clr p2.5
setb p2.4 ;motor 2 is on(forward)
LOOP6: jb p3.0,S ;check sensor 9
Lcall delay
clr p2.4 ;motor 2 is off
setb p2.0 ; motor 3 is on(in downward)
LOOP7: jb p1.5S ;check sensor 6
Lcall delay
 clr p2.0 ;motor 3 is off
 setb p2.3 ;motor 4 is on(in downward)
Lcall delay1 ;call delay function
Lcall delay1
clr p2.3 ;motor 4 is off
setb p2.5 ;motor 5 is on(release)
 setb p2.1
 LOOP8: jb p1.4,S ;check sensor 5
 Lcall delay
 clr p2.1 ;motor 5 is off
clr p2.5
setb p2.5 ;motor 3 is on(in upward)
 setb p2.0
LOOP9: jb p1.6,S;check sensor 7
Lcall delay
```

```
clr p2.0 ;motor is off
clr p2.5
setb p2.6 ;motor 2 is on (reverse)
setb p2.4
LOOP10: jb p1.7,S ;check sensor 8
Lcall delay
clr p2.4 ;motor 2 is off
clr p2.6
setb p2.2 ;motor is on (forward)
LOOP11: jb p1.1,S ;check sensor 2
Lcall delay
clr p2.2 ;motor is off
RET
DELAY1: mov R0, #08H ;2sec delay function
H3: mov RI, #0ffh
H2: mov R2, #0ffh
Hl:  DJNZ R2,HI
DJNZ R1, H2
DJINZ R0, H3
DELAY: mov R0, #0ffh
H4: DJNZ R0, H4
END
```

CONCLUSION

Each and every project is never complete as new things are learned further modification done these we try to make an automated pick and place robot which increase the efficiency in production of plastic moulding industry. All though there is higher initial cost involved but we try to make system running cost economic. This is just beginning, we can add different enhancement to year. As earlier we have explained the advantages of this robot. The operator's interference is minimal because the system is automated because it increases efficiency and reduces manual control operations. Worked very hard to develop such a project. The project is enhanced by years of experience. Each project gets better, and then makes us perfect like the previous exercise.

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Road Safety and Accident Avoidance System Using Tyre Killers

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ABSTRACT

Accidents are increasing day by day. Common mistake and negligence risk are likely to increase. Our government has enacted a number of rules for the safety of the public and to reduce the accident rate. But it still causes many problems. The main objective of this project is to solve these problems. By enabling communication between a motorized tire killing systems with a traffic light system via Arduino, we can control traffic. The spikes are turned on when the traffic light is turned on in red / yellow, and the spikes are closed by applying communication between the tire kills to avoid overloaded vehicles in hilly areas when the traffic light is on the green tire. For System with load cell by Arduino. With this project, we can avoid many dangers and save people's lives.

KEY WORDS: ARDUINO, SPIKES TURN UP AND TURN DOWN, TRAFFIC LIGHT SYSTEM, LOAD CELL, TYRE KILLERS.

INTRODUCTION

Safety and security are the most talked about aspects of every day of our lives. In the current scenario, we face many death cases due to road accidents. A traffic accident is any vehicle accident that occurs on public roads. The idea of developing this project is to do some good for the community. The main objective of our project is to build a safety system that integrates the tire killing system with the traffic light system and the load cell to minimize the chance of accidents. In our early life, we did not focus on traffic regulations that would create accident rates. This is a situation we see in our daily lives thinking about finding some solution to this problem, so we can follow traffic rules and overload vehicles in hilly areas. (Dinesh K., N. et.al, Bharagava Sai,G et.al,

2013): Come up with this idea of avoiding the passage. Tire killing systems are commonly used as a means of preventing vehicles from crossing over. In our project, we have provided communication between each module by the Arduino according to the embedded C program, to educate the public about traffic rules and prevent overloaded vehicles.

MATERIAL AND METHOD

Existing System: In this picture, during traffic, no one follows the traffic rules because they have to get to the office or any work on time. But when all people think this way, the risks are huge. [Gurudatta Verma et. al, Rishabh Sonkar, Lekhraj Bowaria et. al, 2018] Usually people wait until the red signal stops, and when the yellow light begins to count, everyone starts riding before the yellow signal gets to the green.

Therefore, it is possible to collide with opposite vehicles on both sides. In the photos above, we can see that the overloaded vehicle went down due to an imbalance. Generally in hilly areas, overloaded vehicles should be avoided.

This is because the vehicle slipped underneath while rotating with a corner mismatch. Sometimes going backwards automatically, it can also damage other vehicles.

Figure 1: Not following traffic rules
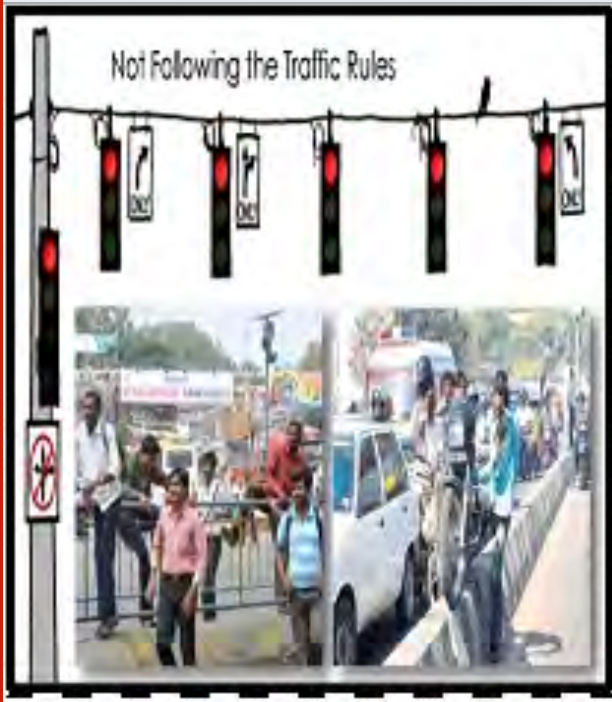
Proposed Work: In this proposed model, we provide communication with the traffic light system between the tire killing system. So when the traffic light is red, the spikes are turned on, and when the traffic light is green, the spikes stop according to the embedded program. A delay is provided for each signal so that the spikes can move accordingly.

Figure 2: Over load vehicle passage signal

We provide high-range transmitters in every ambulance, as well as police car and high-range receivers in the traffic signal system. Therefore, when an ambulance or police patrol car arrives, the transmitter triggers the receiver in communication with the traffic signal system and makes the signal green in that particular way. We already have a similar program to turn on spikes when the signal is green. So the spikes are lost accordingly. [Jacob B and Veronique Feypell-de La beaumelle, (2010].

Similarly, the tire killing system is also implemented in the load cell. The load cell disrupts the ground before entering Hill Road. Where, for each vehicle, we need to upload the threshold value to the program. When the weight of the vehicle exceeds the threshold value, the spikes are otherwise rejected. Therefore, if it can propel the vehicle to reach threshold value.

Figure 3: Collapse of over load vehicle due to unbalance

RESULTS AND DISCUSSION

In this project, about 60 percent of the expected result is obtained. We need to calculate the range of true value for each vehicle. Compared to the traditional system, however, running the project will reduce the risks. The tire killing system is first used to control the wrong entry of vehicles onto the road. In this project, a tire killing system is used to control traffic and prevent overloaded vehicles from traveling over mountainous terrain. The spikes corresponding to the threshold value of the vehicle weight in the load cell along with the light signal are up and down.

Weight bridge work takes place in two conditions. If the load exceeds the buzzer will sound and the securities in the toll plaza will check the vehicle's load and drive the vehicle to reduce the load, otherwise they will give an advance warning or they may pay anything. In another case, if the load is not greater than that of the vehicle, the vehicle will have no other problem to travel through the city.

Condition–2 In this case, when the traffic signal is in the red state, the servo motor acts in the forward direction and the spikes remain in the active state. The red signal

Figure 4: Block diagram of Road safety using tyre killing system

Figure 4: Image of the Road safety using Tyre killing system Condition 1
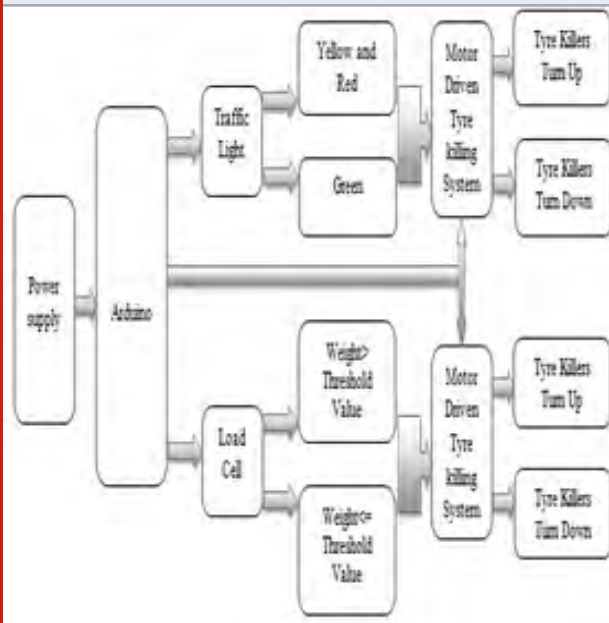
count makes the motor run and the puncture system active so no vehicle can move forward. Vehicles must wait until the green signal arrives and the servo motor operates in the reserve direction. [Vipul Phulphagar, Dr. Rupesh Jaiswal, (2017)]

Figure 5: Image of the Road safety using Tyre killing system Condition 2
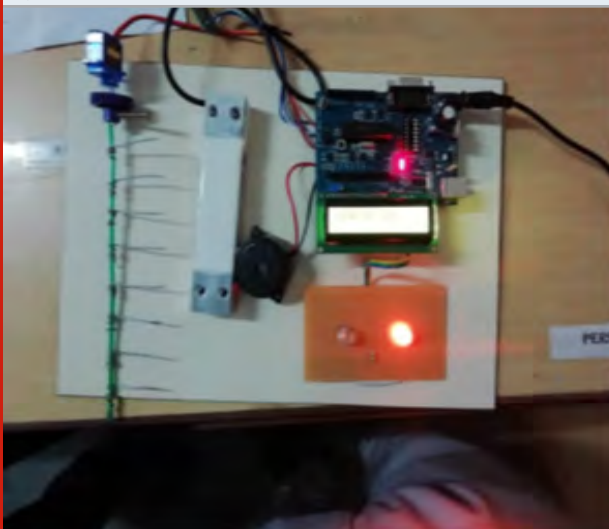
CONCLUSION

Identifying overload systems and road safety systems can increase awareness of the imminent danger. The technological advancement of society causes many people to disobey the rules and we cannot follow all the rules. This system can solve this problem. It forces people to follow more rules. This system helps people avoid lithological hazards and makes them an ideal rule

for citizens to follow. Implementing this system can change other problems that people are in trouble with and can disrupt the development of the country. Such ideas make that dream possible. This system is possible because the government is unable to comply with the rules set by the government. Every youth's dream is to make the country a better developed country.

Future Scope: If implemented by the government, the real life scope of this paper is good. It helps reduce deaths in road accidents around the world. Non-compliance with traffic rules can increase the severity of those accidents. In this paper we have a tendency to develop road safety using a tire killing system. According to the survey, we can reduce the road accident fatality rate by 80.6%. It has great social impact and social concern on public safety. In the future, we have a tendency to implement tire-killing with loads, as well as fix what is driving with driver overload. The government needs to implement laws to establish such a system in powerful areas and outposts.

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Safety Monitoring and Control of Utilization in Domestic Application

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ABSTRACT

In our project, the main aim is to prevent accidents regarding domestic usage of LPG cylinder. We implementing our idea using the cylinder regulator knob is automatically controlled by gas stove knob. When the gas stove knob is turned OFF or ON, the cylinder regulator knob also turns OFF or ON accordingly. Level of both the knobs remains same. There is a gas leakage in the tube that can be sensed, then the gas cylinder regulator knob turns OFF or ON automatically and also turn on buzzer for intimation to the user. Where this idea was experimented in miniature kit. In that kit, the components like Arduino NANO, LPG Gas Sensor, LCD, Relay, Solenoid Valve and buzzer are used. LPG Gas Sensor is used to detect leakage of gas in the cylinder valve or pressure regulator or rubber tube. Arduino NANO which takes place a major part for the communication of devices which is connected in the kit. It is the important one which programmed by embedded C language. There is knob in that kit which is for on and off function of whole system. Whenever we turn on the switch the cylinder regulator also on and acts the function. Whether the leakage in the gas are sensed by LPG gas sensor and also automatically the switch was turn off. This is the setup was done it in simple experimental kit.

KEY WORDS: ARDUINO NANO, LPG GAS SENSOR, LCD, RELAY, SOLENOID VALVE.

INTRODUCTION

In the developing world, the population of the countries drastically increases, therefore the miniature of families also becomes increases. This leads to the usage of LPG cylinder in domestic application becomes widely extended. Nowadays, the accident of LPG cylinder is due to leakage of gas in the rubber tube which is connected between stove and cylinder (Naren et al. 2018). Cylinder valve may also option of leakage of gas may happen. Most probably the accidents also occur may due to opening of the pressure regulator of a cylinder is not in usage.

As a part of this all defects can be rectified by implementing our idea in small project kit. In this project, where we use solenoid valve which took a major part of controlling the regulator of cylinder (Sakthi et al. 2019). The advanced Arduino NANO were used for the communication between the gas sensor and all other parts of the function. And for acknowledge of function of the kit which is let by displaying message in LCD.

MATERIAL AND METHOD

LPG: Liquified Petroleum Gas (LPG) is a colorless odourless liquid and non-corrosive. It is classified as highly flammable, it also contains more than 0.1% butadiene and

it can classify as carcinogen and muteagen. The LPG may leak as gas and also as liquid. It can cause more harm to the human. And cylinders that explode if involved in a fire. LPG also cause cold burns to the skin and act as asphyxiant at high concentration.

Prevention of LPG: To prevent this kind of accidents regarding domestic usage of LPG cylinder, here implementing using cylinder regulator knob that can automatically controlled by gas stove knob. For these, automatic controlling application action that can take place with the help of LPG gas sensor, potentiometer(knob), LCD, relay, buzzer and solenoid valve (Kiruthika et al. 2017)

Arduino NANO: Arduino is an open source platform and user-friendly software. They can be program to create embedded system which can control and sense real time parameters.

Figure 1: Block Diagram
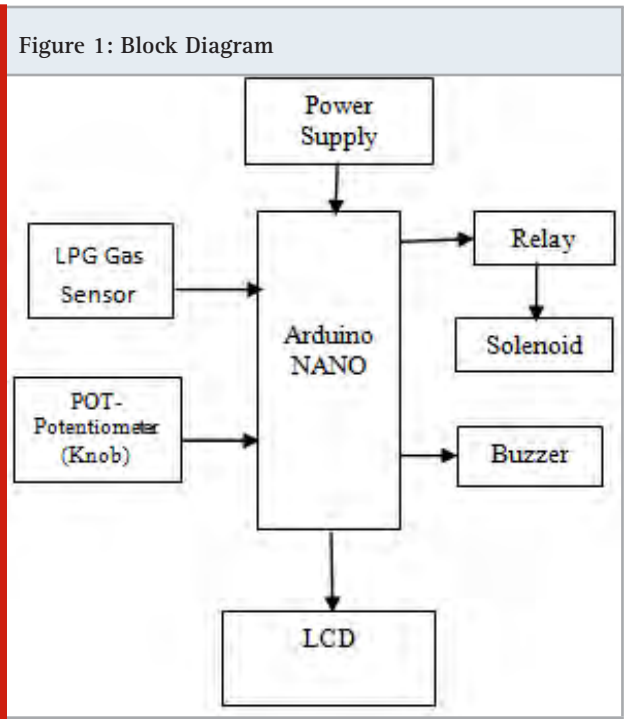
LCD: LCD is an electronic display module and it is in the range of 16*2 LCD display. A 16*2 LCD means it can display 16 character per line and there are two such line. The LCD that can display the status of the LPG in domestic application. LCD's are classified into two types. Dynamic scattering type and field effect type (Neha et al. 2017).

A. Gas Sensor: Gas sensor is a sensing element that can sense the leakage smell and make the stove knob to get automatically off, and also make the buffer to give alarm sound.

B. Power Supply: The power supply that can supplies electrical or other type of energy to on output load.

Buzzer: It is a piezoelectric buzzer. it has a piezoelectric

diaphragm of three terminal which related to self -driver circuits. The large output sound obtained through suitable resonant circuit. Such kind of buzzers are used in gas alarm.

RESULTS AND DISCUSSION

According to this project when the cooking stove knob is turned off, the cylinder regulator knob turns off automatically. And only when the cooking stove knob is turned on the LPG gas cylinder knob also turns on automatically. In this condition when there is a leakage of LPG gas it can be identified using gas sensor and the cylinder regulator knob turns off automatically.

Figure 2: Proposed system hardware kit
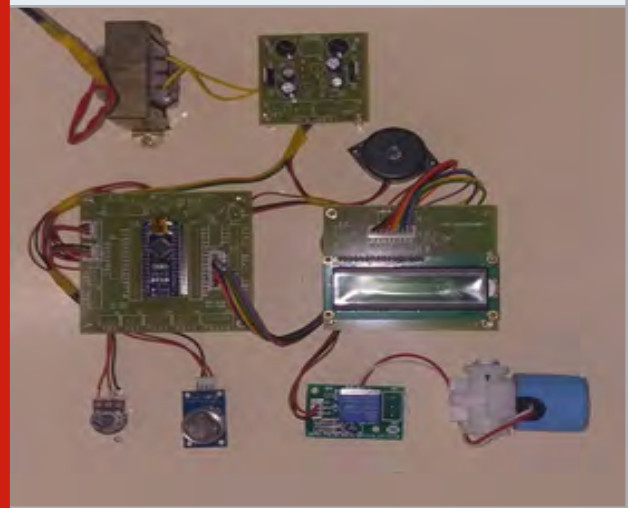
And it does not leave the LPG gas to flow out even when the stove knob is in on condition, also the buzzer sound is being given just for our information. By using this project, the safety in domestic field can be improved as LPG gas stove places the major role in our daily life.

CONCLUSION

Safety monitoring and control of LPG utilization in domestic application is a very safety method in domestic application. According to survey 19491 fire accidents due to LPG cylinders and cooking stoves has been occurred between 2010 to 2014. The main reason for this fire accidents are not turning off the cylinder regulator knob, when the cooking stoves are not in use. And another important reason is that the LPG gas leakage that leaks from the cylinders cannot be stopped automatically. In this project the solutions for this case are been experimented and verified.

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Smart Child Saver Machine for Bore Well

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ABSTRACT

Bores that yielded water and during this approach got around or left discovered. A fittingly solid prime of sensible shading to hide the mouth of the bore can prevent from such mishaps. To assist in such salvages we have projected a framework. Ways to stay a child alive during a drag ought to absorb to think the absence of an element, enlarged temperatures and moistness that produces a physiological condition. These problems are attended with natural air conveyance with or while not a conveyance of the element.A hand-controlled hardware to convey natural air within bore is being structured. This system cuts down temperature and conveys natural air.Imagining the child is formed conceivable with infrared waterproof CCD cameras and a convenient high goals television monitor. The camera is with an overseas correspondence work place. The hardware is meant to figure off the twelve potential unit battery of the salvage vehicle. It will be a lightweight weight machine, which will go down into the drag well funnel and hold the caught body by mechanical arm with manual activity. This machine gathering are upheld by a grasped tire and twine block drive, a stand and each essential ruffle. The remotely controlled mechanism can go down the drag well and play out the activity. A lot of various issues can to boot be stayed removed from by this elective procedure.

KEY WORDS: CHILD SAVER MACHINE,WIRELESSTECHNOLOGY, BORE.

INTRODUCTION

The present situation of bore well in human society is drinking water that prompts a large quantity bore wells being undone. Bores that yielded water and on these lines got drained area unit left discovered. Very little children while not seeing the gap burrowed for the drag well append and find caught. There is no legitimate strategy to avoid wasting unfortunate casualties of such mishaps (1-2). At the purpose once the create move near courses of action do not work, Army is brought inning most cases declared up heretofore, a parallel gap is burrowed up and afterwards tier manner is formed to achieve to the subject's body. It is not simply an amount taking method, however too dangerous in numerous ways that. Additionally it includes a good deal of vitality and dear assets that don't seem to be effectively accessible everywhere the place and during this procedure we have a tendency to unendingly want enormous pace round the caught bore that we will burrow a parallel bore. These specially appointed approaches embody real dangers together with the likelihood of wounds to the cluster of subject throughout the salvage tasks.in addition, the body might entice any within the jetsam and also the emergency develops far more suggests that passing. As a rule, we rely on some temporary plans.

This does not guarantee US of any long run arrangement. In such techniques, some kind of snares area unit used to carry the sufferers clothes and body. This could cause wounds on the body of the topic. It attracts a good deal of undue thought and analysis of the common organization. Substantial prices have likewise apparently caused a lot of the time. It is relevant to form respect to that associate degree acceptable specialized account such crisis emergency is that the want of the hour. All the lot of therein thick of specialized headways and nonstop analysis, technocrats ought to assume the liability to find an easy answer (3-4). It's a problem of national yet as social concern associate degree early advance within the course of increase an instrument for the salvage of casualties of such within the wake of examining each one of the cases we have a tendency to found a real issue to try and do, to try to made a such machine-controlled machine which might expertise the caught bore well with no facilitate and handle the caught body in least time with giving offices of element chamber, receiver, infra-red diode, speaker, With this machine, there's no manner of harming figure and different minor harms, and that we referred to as that machine as "Smart Child Saver Machine". (12-13).

MATERIAL AND METHOD

Bore well kid saver machine have the varied style of gas, hydraulic and detector operated parts. Thus, primarily parts square measure divided into main 3 components. Golem vehicle, rescue golem and miscellaneous(5).

A.Central Frame: It is a hollow shaft, manufactured from soft-cast steel. It carries a half-dozen potential unit battery at the center of one finish of this cytoplasm connected wireless camera and alternative finish is connected to the rope.

B.Translational Element: Translational part helps the mechanism to run within the bore well. Its one finish is attach with the central frame and different finish carries rotary actuators.

C.Compression Spring: It is a spiraling sort compression spring that is created of steel. One finish of it is mounted with the central frame and otter finish helps the translational part to maneuver up and down. Compression spring additionally exert ample force within the wall of bore well to maneuver swimmingly within the bore well. Compression spring absorb vibration and defend camera and electronic circuit from shock.at first it's in enlargement condition and once golem enters into the bore well it compresses and build ample grip to carry the system within the bore well.

D.Oxygen Cylinder: A gas tank could be a storage vessel for gas that is either control struggling in gas cylinders or as during a refrigerant tank. Big selection of metallic element, steel, and fiber-wrapped medical gas cylinders area unit offered in market.

E.Automated Arm: One machine-driven arm with DOF

six is connected at the front end of the basic shaft. This arm is suitable perform developments each that manner, viz. left (yaw) tilting forward tilting in reverse (pitch) And tilting aspect to aspect (roll).A modern golem with six joints intently seems like a person's arm - it is the comparable of a shoulder, associate elbow and a gliding joint. The shoulder is mounted to the basic shaft. One of the top effectors may be a versatile gripped (improved variant of the hand), which might handle and convey numerous articles. This all-mains gripper has worked in pressure sensors that tell the laptop however exhausting the mechanism is grasping a particular article. This keeps the mechanism from dropping or breaking something that it is conveyance.

Development

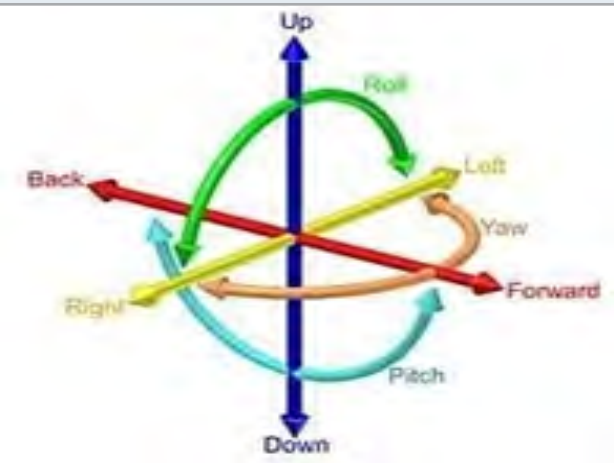Figure 1: Block Diagram

The six level of chance [shown in figure 2] is accomplished by the subsequent machine-driven joints. The mechanism Joints is that the element during a mechanism that helps the connections to travel in varied form of developments (6).

Figure 2: Degree of Freedom

Mechanism: Various varieties of elements area unit [shown in figure 1] utilized in our full salvage activity.

The blend, or structure, of 4 bar elements is critical once assuming to produce a perfect yield movement for an exact data movement [shown in figure 3]. Thus on limit value what is more, greatest productivity, we have a tendency to choose the smallest amount advanced system conceivable to realize the wished movement and salvage activity. That is why we have a tendency to utilize four bar elements for our automaton development. Four bar element can facilitate for our automaton to understand on bore well and travel fitly on bore well. When got a handle on the child we have a tendency to utilized rope pulley-block instrument for elevate the child body from bore well firmly. Lookout of rope within the pulley block thus we will get a good grasp.

Figure 3: Flexible Robotic Arms

As indicated by the utility bore well child saver machine primarily includes of the related two primary components.

Method of Rescue: Technique for Rescue (working) commonplace and legit salvage strategy is that the main key of accomplishment of bore well salvage activity. Since to elevate the toddler out of the restricted limits of the drag wells is likewise not very simple. The complete salvage tasks square measure isolated into 3 steps obtaining a handle on and last one is First we've to involve at child with no issue and handle the toddler body securely; this is often finished with the help of a distant camera joined to the mechanism (7-9).

1. Abstain from hurrying everybody to the drag well and clean the surrounding cluster from the drag well.
2. Fix the stage on the well with the goal that the focal fringe of the stage is over the well.
3. At that time our golem is enter in to the drag well terribly step by step, a security rope is given which fits concerning as a facilitate for the golem. It is conceivable to lower the golem up to forty feet within the drag well.
4. Guide the Camera appended with the golem into the well cautiously, until it arrives at the child, observation the screen cautiously. Infrared diode

that is connected to the golem provides the profundity at that the child is caught, and also the image on the screen provides true whereby the child the type of the grasper to be utilized within the salvage, no matter whether or not it's vertical mechanical arm, or level machine-driven arm. is chosen place along up with relevance true of the child.

6. Carry a golem up and collecting the mechanical association or machine-driven arm for the specified position.
7. After all golem went into bore well for salvage.
8. Utilizing the O chamber crisp O is provided to the shaver through hoses, that is joined to the golem. What is additional, it keeps up the temperature and wetness into the drag well.
9. Allow simply 2 individuals on the stage and cautiously management the whole get along within the well.
10. Presently the machine-driven arm fastens the shaver firmly, which might get a handle on the shoulder, the carpus, or the lower leg of the kid.
11. Once the salvage, treatment is to lean to the child by the meditative cluster.

Experimentation: In this enterprise have a progression of examination to research youngsters solace level and conduct reactions towards a mechanism arm below a controlled enterprise. The Goal of utilizing such management style was to empower the mechanism to look in a position, flexible whereas operating with sleek, however firm organic kind movements. The target was to boost and encourage the human-robot collaboration/ cooperation with youngsters. During this, we tend to focus on the collaboration between an individual's and a mechanism arm in 3D measurements. We have been done a standard testing to run our drag well juvenile saver machine quickly what is additional, human tantalizing. Testing technique is given to a lower place. The entire framework would are tried by utilizing a young person (toy) in an exceedingly pretend created bore well (10- 11).

Figure 4: Bore well structure with pulley

RESULTS AND DISCUSSION

Bore well child saver [shown in figure 4] may be a noteworthy endeavor to spare existence of the casualty of bore well mishaps. Apart from this, the exceptional capability of moving through vertical and slanted funnels makes wide extent of use for this machine in collection enterprises and different applicable fields.

- During the arrange and manufacture of machine.
- The structure is formed enough to support each single conceivable burden, but it's created labile at the same time to switch wide scope of bore measure and any adjustment
- In this safeguarding activity time may be a basic issue that alone will stop mine the action or disappointment of the whole lot activity. During this means,it has been planned basic cognitive process the full hindrance that will emerge throughout the activity.
- The dominant of the vehicle and the salvage golem is deeply touchy that causes it conceivable to succeed in to high profundity at the earliest chance and handle.

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Smart Glucose Drip Bottle with Patient Monitoring System

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ABSTRACT

In our project, the level of glucose in the glucose trip bottles is found that are used in the hospitals. If the glucose bottle's level is near empty, alert information will send to saved mobile number by message and buzzer will make sound to alert the physician. If alert message and buzzer sound are ignored smart glucose system will cut glucose supply to the patient automatically to prevent patient from back flow of blood to glucose bottle. We can load two bottles at a time in this smart glucose system if one bottle is about to empty glucose from another will goes to patient. Level sensor, temperature sensor and pulse rate sensor send signal to Arduino board. The Arduino controls the stepper motor placed in glucose tube. GSM module gives output to android app and saved mobile number by sending text message. Physician can know level of glucose, patient temperature and pulse rate by sending message to GSM module. This smart glucose system also has display and buzzer. Using android app physician can get patient's body temperature and pulse rate from smart glucose system's GSM module by using internet and physician can change glucose supply from another drip bottle if one bottle is emptied.

KEY WORDS: ARDUINO, IR SENSOR, TEMPERATURE SENSOR, PULSE RATE SENSOR, BUZZER.

INTRODUCTION

In modern days because of advancement in medical technology many new technologies has been invented to assure fast recovery of the patient in hospitals. If physicist who working in outpatient department forgot to stop glucose drip bottle when it emptied, it will causes problem to the patient by blood loss. To alert the physicists, this system can send an alert text message to saved mobile number saying that drip bottle's glucose level is near to empty, as every physicist always keeps their mobile with them in modern world. This system contains stepper motor to stop the flow of glucose in traditional glucose tube. Physicist can interact with smart glucose system by android app and message from anywhere. It also monitors the patient temperature and pulse rate. Physicist can view the glucose level, temperature, pulse rate via android app. Some hospitals uses alarm technique to alert the physicist to change the glucose bottle (Paul Bustamante et al. 2012).

Sometimes physicist ignore the sound produced by alarm, they might not close to alarm system. Alarm system should not use high frequency sound as it is placed in hospitals. GSM module is also not high in cost. In this setup, the smart glucose drip bottle system allows

changing glucose bottle very conventionally and this system not directly contact with glucose bottle as this uses IR sensor which is non contact type sensor. The level sensor can also be made to fix in the bottle stand in which the glucose bottle can be made to hang. It also has automatic flow stopping feature and patient's body temperature and pulse rate measuring feature. These data can be view through internet by android app or message. It helps to prevent the back flow of blood to glucose bottle (Arjun udayan et al. 2016). This system also can handle multiple glucose bottles.

MATERIAL AND METHOD

A. Ir Sensor: This is one of the most commonly used sensors in non contact type level measuring where the remote monitoring system and some other places where direct measurement not possible. IR sensor stands for infra red sensor which uses infra red light to detect the presents of object near to the sensor. IR sensor uses the IR radiation which has wavelength from 0.75um to 1000um which is not lies in visible light region. These rays are not visible to human eyes. It is categorized based on its wavelength into three regions. They are near infrared, Mid Infrared, Far Infrared. The sensor emits IR light in certain wavelength and this radiation hit the object and returns back to the receiver. The IR receiver sense the return radiation to the output device coupled in the system. IR sensor used as Proximity sensor, Item counter, Burglar, Alarm Gas Analyser Human Body detection, rail safety etc.

Figure 1: IR sensor

B. Gsm Module: The Global system for mobile Communications (GSM) is a electronic chip with antenna which is used to connect a system with cellular communication. GSM communication interfaces are like RS-232, USB 2.0 and others for Computers. It has a slot to put SIM stands for Subscriber identification module. So it can act like mobile phone and message are send by that mobile number (Kiruthika et al. 2019). It also has IMEI number stands for International mobile Equipment identity like all mobile phones for unique identification. The android application in mobile communicates with arduino by GSM module as it has SIM in it. Antenna in GSM module used to receive cellular. GSM module used to do encoding, decoding and other network related task in a system where this module is attached. The terminal equipment is a mobile application which receives the values from the module associated in the system. The GSM Module makes use of AT commands for communication. It can feature all the functionalities of a mobile phone through computer like SMS, MMS etc.

Figure 2: GSM module

C. Arduino: This is an open source platform which has ATmega328 microcontroller on board to use hardware and software build electronics projects. First arduino was build in 2006. It is a microcontroller which means a small computer. It is the tool for controlling the devices and can interact with the surroundings. It reads the Inputs of microcontroller and turn on the output devices. Arduino has a inbuilt memory whre codlings are saved to perform tasks. Using arduino programming digital and analog pin's signals can be control (Gowthami et al, 2019). It can be programmed with C++ language. There are many electronics boards out of there arduino board is best, because it is low in cost, configurations are easy and perfect for small applications, cross platform and wide variety.

The number of pins in ardunio is use to connect various components. These pins have two varieties, digital and analog pins. Digital pins are used to read input signal state and write output signal state, using on and off method. Most of the boards have fourteen digital pins. Analog pins can read a range of values, and are useful for fine grained control. Most of the boards have six analog pins. Arduino is a most popular kit to make small projects and applications also connecting electronic device with arduino is easy. As arduino uses ATmega328 microcontroller, it overcomes the drawbacks faced when using old 8051 and 8052 microcontrollers. Arduino can be connected with laptop or system via USB cable to dump coding. Also the real time reading of arduino can be view on monitor using USB cable. Ardunio Uno has 32 kb of SRAM and 1 kb of EEPROM (Sakthi et al. 2019). The clock speed of the ardunio is 16 Mhz, so it can perform a task faster than other processors or controllers.

D. Stepper Moter: Stepper motor is one of the type of motor that convert electrical energy into mechanical energy. A stepper motor uses magnet to highly precise motor shaft turning when electric pulse is provided. No

need of feedback to control the stepper motor as each pulse drive motor one step. Unlike the regular DC motor rotates step by step. Number of step rotation happens exactly same as number of pulse given to the motor (Sundar Ganesh et al, 2017). The stepper motor can turn the exact amount of degrees to control the position with exact location. Stepper motor has many types such as permanent magnet, variable reluctance and hybrid synchronous stepper motor.
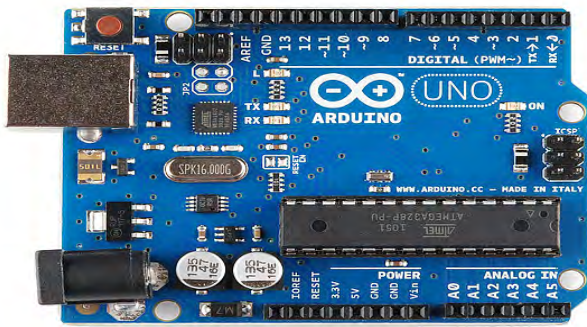
Figure 3: Cloud Network

Figure 4: Stepper motor

E. Glucose Bottle: The Glucose is one of the form of sugar that is normally stored in liver and muscles in the form of glycogen. If body goes under glucose shortage situation then glycogen will be converted into glucose. Glucose bottle is non degradable plastic bottle. It is not a reusable bottle. Bottle should be dispose properly after use.

Figure 5. Glucose drip bottle

If a patient has low blood sugar then physicist might treat with glucose. Low blood sugar caused by using insulin and not taking enough food. Glucose liquid in bottle increases the amount glucose level in body quickly. Glucose made up of carbon, hydrogen and oxygen molecules. Glucose also used in some purpose other than medication guide. Glucose bottle is made up of plastic which won't reach with the liquid inside it. This bottle also has expiry date. It should use within that period mention on glucose bottle. Glucose drip bottle is a use and throw bottle but it should dispose properly according to the rule to avoid harmful problems.

RESULTS AND DISCUSSION

The Smart glucose drip bottle can be used to reduce careless problems in hospitals. Android app can show patient data like body temperature and pulse rate to physician. Physician can control this system by message without android application.

Figure 6: Circuit connection
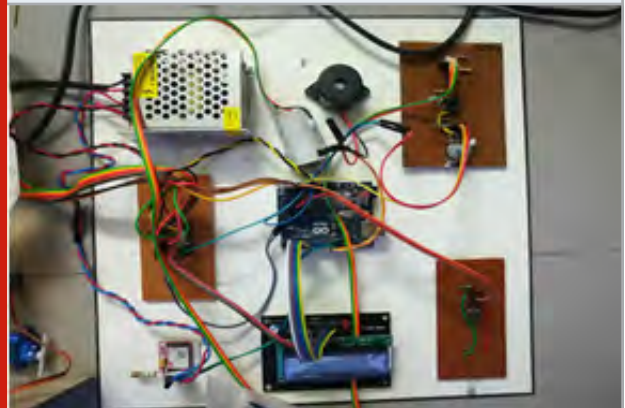
This is smart glucose drip bottle system's circuit connection. SMPS used for power supply. It also uses buzzer for extra safety.

Figure 7: Glucose bottle

Three level sensors connected near each glucose bottles to indicate the level of glucose in bottle as high or medium or low.

Table 1. Body temperature and pulse rate		
Patient number	Temperature (oF)	Pulse rate (bpm)
1	98.5	70
2	98.1	75
3	99.1	82

This table is sample reading of three random patient's body temperature and pulse rate.

Figure 8: Glucose bottle loaded

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Designing and Modelling of Stabilizer Circuit for Wave Energy Conversion System

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ABSTRACT

The depletion of the non-renewable energy sources becomes a major concern as the demand and supply for the energy consumptions increasing each year. Due to the rising concern towards the consumption of non-renewable power sources, the renewable power source becomes increasingly more significant in vitality misuse. The extraction of wave energy from the generator or the wave energy converter (WEC) produces a non-uniform output waveform due to random motion of waves that varies in amplitude and frequency. Furthermore, the existing technologies are mostly robust and bulky system which is not suitable to produce the smooth sine wave. The smooth sine wave is important to protect the motor against excessive voltage spikes and overheating. Thus, this journal disclosed analysis, design and modelling of an electronic converter or stabilizer for the random signals. Designing and modelling of electronic converter circuit is developed and implemented in MATLAB Simulink software. The simulation result of electronic converter circuit is presented, and the results correctness is verified to the previous model

KEY WORDS: WAVE ENERGY CONVERSION SYSTEM, SIMULINK MODEL, STABILIZER.

INTRODUCTION

Global electricity consumption and demand is increasing rapidly over the years. The rapid development of global economy which consequences to the increasing demand for energy raises concerns as the sources for the energy which is a non-renewable source is depleting over the years. To meet the demands for the energy, the interest in harvesting the energy needed from sustainable sources have increased consequently. The renewable energy is harvest from sustainable and free sources in this world and it come from different sources such as solar energy, wave energy,biogas,and wind energy.

However, wave energy seen to be more persistent and predictable compared to the others as it has a high potential for energy as well as the sources for this energy is abundant. Wave energy is energy harnessed from ocean or sea waves generated by reaction between the thermal heat and wind that blows over the outside of the sea.The amount of wave energy produced depends upon the wind speed, sufficiency of the waves and the separation of the wind to the waves.

Literature Review: Wave energy is extracted using the wave energy devices. Over the years, the devices

haveevolved and improved to achieve better performance and efficiency. Thus, here we have discussed the previous technology of the wave energy converter (WEC) device and its working principle.

Energy Consumption In World
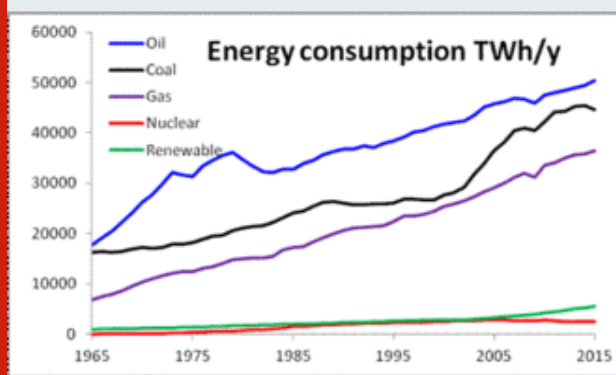
However, the output signal from the generator of the devices is non-uniform signal due the oscillatory nature of waves that varies in amplitude, speed, and frequency. A linear generator is modelled to prove the non-uniform signal created from the signal.

Hence, an electronic converter is developed to convert non-uniform signal into smooth AC signal to be fed to grid network. Previous technology of the electronic converter is studied and for this project purposes, design and modelling an electronic converter. Both simulation and modelling of the electronic converter circuit is performed using MATLAB Simulink software.

Wave energy topology

Wave Energy Converter (Wec): Here we discussed about different types of wave energy converter devices and its working principle, power take-off mechanisms and types of generator will be discussed.

Installation Locations

Different Types of Wave Energy Converter (Wecs):

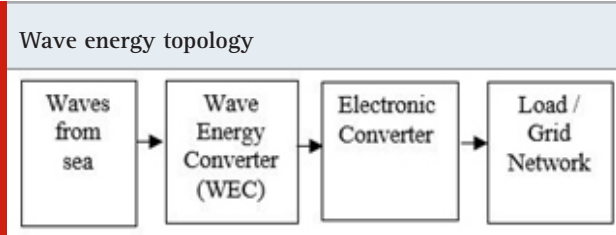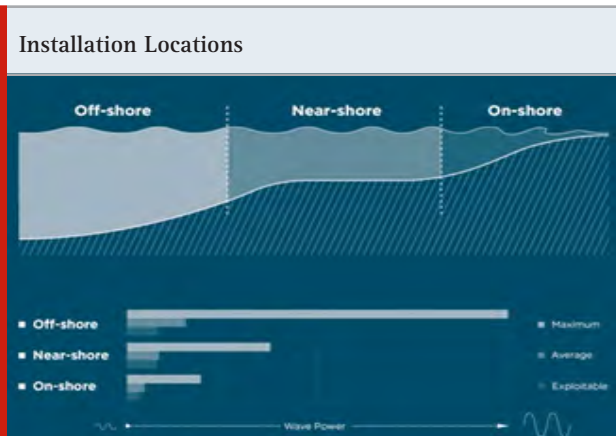Wave energy converter devices are designed to produce the energy from the ocean. The wave energy devices are classified according to the installation locations, its working principle and size. In this study, the location of the devices is focused on the shoreline and near shore location which aimed for the small load application which having an output power of 1kw or less.

Installation location descriptions

OFFSHORE	LOCATIONS NEAR-SHORE	SHORELINE
	Located at deep water location. More than 40m	
	Harvested vast amount of wave power	Located at moderate water depth.
	Between 10-25m deep Attach to seabed Less than 10m	Locate at shoreline
	Closer to utility network Easy for maintenance	

Wave energy converter (WECs) designs and concepts are evolving over the time. Notwithstanding the huge varieties in structure and ideas, WECs can be arranged into three overwhelming sorts which are attenuator, point absorber, and terminator.Attenuator or contouring is a WEC device with several identical components linked together on the surface of ocean. Power is generated due to the relative motion of each section. Pelamis WEC is known as attenuator devices also categorized as pitching wave energy consists of floaters linked by a hinged joint that aligned with the direction of wave propagation. Waves induced movement and motion of the oscillating joint bodies to move against each other thus active the PTO system resulting in electricity to generate. This pitching device is slacked moored. The following figure is example of pitching WECs which is pelamis.

Terminator devices have their vital pivot corresponding to the wave front (perpendicular to the transcendent wave direction) and physically block the waves.An oscillating wave surge converter has pivoted Deflector situated opposite to the waves heading that moves to and for misusing the flat molecule speed of the wave.

Pelamis

Oscillating Wave Surge Converter
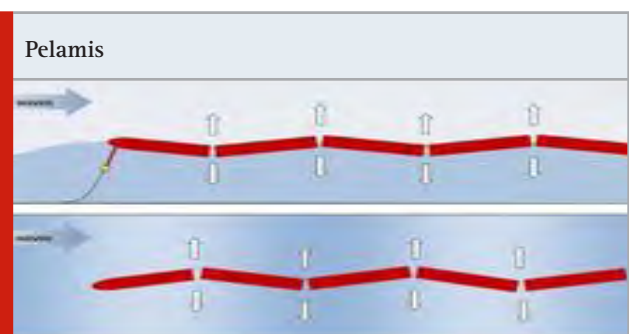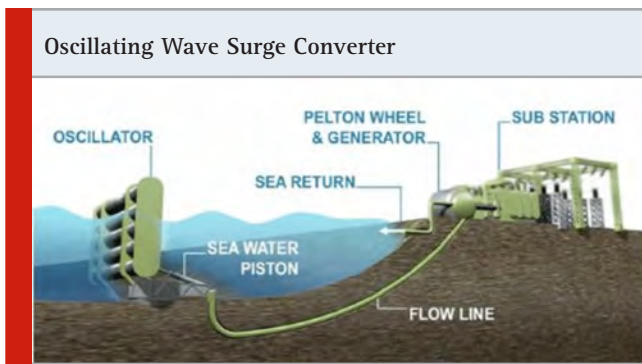
Overtopping devices is constructed with a reservoir filled by the ocean. A turbine is mounted under the reservoir and driven the seawater flowing out of devices. The concept of overtopping wave energy converters work basically is much like a hydroelectric dam. This device captures the energy of the waves by capturing the water into the chamber by directing the water to move and store into the reservoir by over spilling. Itmakes head of the water which is subsequently discharged through various low-head turbines which coupled to generators to produce electricity. The following figure the illustration of the overtopping devices.


Overtopping Wec
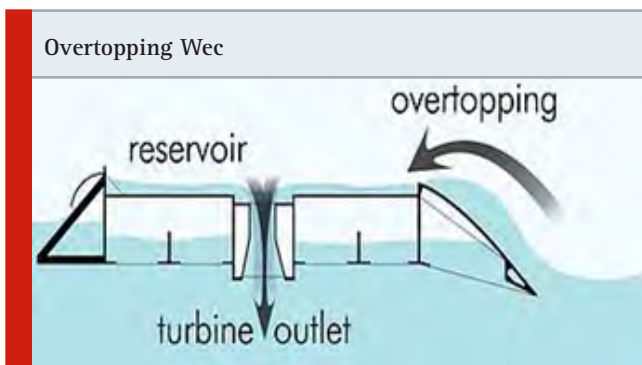
A point absorber is a device that has little measurement comparative to the incident wavelength. They can be coasting structure that hurl all over on the outside of the water or lowered underneath the surface depending on the weight differential.Oscillating water column (OWC) is an example of point absorber WEC. The oscillating water column devices is most developed and deployed off the shorelines or near-shore locations devices. This OWC is constructed such that it has a partially submerged chamber which is opened below the water line and insidethe air trapped chamber.


Oscillating Water Column
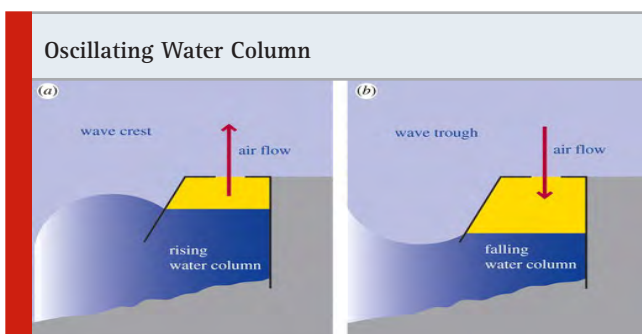
At the top of the chamber, there is another opening where an air turbine is coupled to a generator. "Well air turbine" is the main components of the OWC devices that drive an electrical generator. The oscillating motion of the wave moves up and down causing the wave to enter the chamber and forces the air inside to flow out of the chamber. When the air inside the chamber is forced out through the opening at the top of the chamber, it passes through a turbine. Thus, it generates electricity. When waves descend, the turbine is drive again as air drawn back to the chamber.

The other example of the point absorber is oscillating devices (heaving devices), comprises of float that drift on the surface of waves. This oscillating is known by its horizontal dimensions which are small compare to its wavelength which is consideredto be simple oscillating body having a fixed frame of reference at seabed. The energy is taken from its wave-induced motion. The power take-off (PTO) system isenacted by the developments all over of the buoy opposite to the ocean bed. The linear movement between the buoy and the ocean bed structure actives the PTO is then converted to produce electricity via generator coupled to the mechanical system. Based on the present research, this point absorber device is the only WEC device that linked to direct drive generator.

Power Take-Off Mechanisms: The power take-off mechanisms areused to convert mechanical energy from wave induced oscillation into an electrical energy. As per today, there are several types of this mechanism which are hydraulic, turbine and direct driven system.

Mechanisms of Power Take-Off System
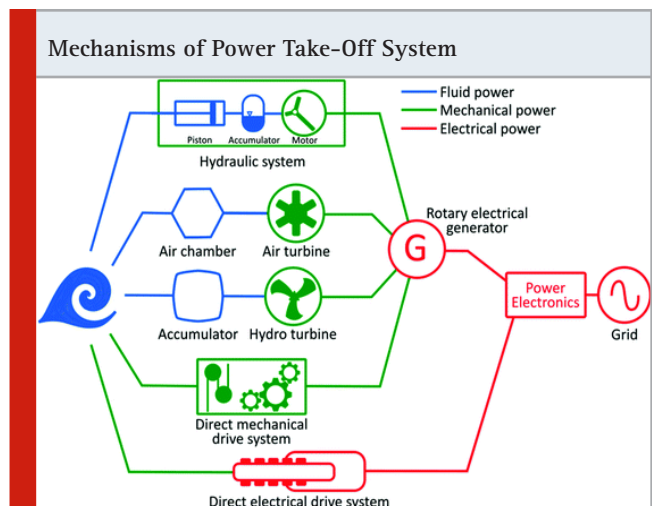
For the hydraulic system, the body, or the buoy of the WECs oscillates due to the force exerted by the waves and activates hydraulic ram or piston which pressurizes the fluid (water or oil). Then the potential energy fluid is then delivered to hydraulic motor or water turbines to be converted into mechanical energy which consequently into exchanged into electricity via the generator. The mechanical loss would be high in this system. The usage of an accumulator in this system can smooth the power production.

Typical Hydraulic Circuit for Wec
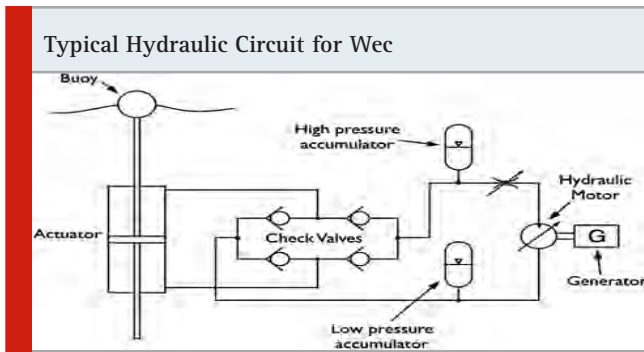
The pneumatic type of power take-off system converted the energy stored in the fluid with high potential energy using a water or air turbines into mechanical energy. If the process fluid is water, the power takes off is usually coupled to an overtopping wave energy converter where the water is collected in a reservoir of a floating profiled ramp. The water collected will be channelled into a low-head turbine, i.e. propeller or Kaplan type. Each turbine rotates or transfer of kinetic energy of the water thus generates the electricity. This type of PTO also suffers a high mechanical loss.When the process fluid is air, the power take-off is coupled to the oscillating water column wave energy converter where the potential pressure across an air turbine is converted into mechanical energy.

A direct driven system is another type of PTO mechanism. It is driven by a linear generator that linked directly with WEC. This type of power take-off system has a stator and translator. The wave induces a translation motion that relatively induces the electrical current as the stator is equipped with coil in the stator thus convert it into electricity. For grid connection, a stabilizer is needed to stabilize the output signal of the generator to a stable output waveform. The stabilizer is used to smooth the power production. The mechanical loss in this system is lesser compared to the other two systems. However, the electrical losses in the stabilizers can reduce the power efficiency.

Comparison of linear generator and rotary generator

Linear generator	Rotary generator
Long lifespan	Shorter lifespan
Vertical rotation of translator	Fixed axis rotation
Active area on air gap is not fixed	Active area on air gap is large and fixed
Simple and robust structure	Complicated structure
Requiredlow maintenance	Required frequent maintenance

Types of Electrical Machines: From the previous research paper, it is found that mostly the generator for the wave energy converters is evolving around the linear generator and rotary generator. The topology of each generator is different however their working principle is almost the same. Nowadays, the interest of linear generator is deeper than rotary generator. With linear generator the

cost of manufacturing is lesser as the mechanical part in linear generator is less.

As been observed, direct-driven linear generator is proved to be more efficient and suitable in this wave energy conversion study.

Stabilizer: Due to the random motion of the waves and wave energy converter, the output of wave energy converter varies in amplitude and frequency. The main role for stabilizer in harvesting wave energy is to convert the unstable waveform due to oscillatory motion of the wave into stable waveforms to be fed into grid network. Thus, this section will review stabilizer topology and the current stabilizer technologies. The framework of stabilizer system is the interface between thegeneration and grid network. The following stabilizer stages in waves energy extraction.

Power Conversion Stages
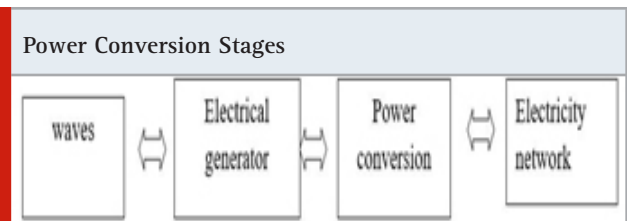
This output waveform varies in frequency and amplitude need to be stabilized to obtain the stable waveform for transmission and connection to the network.

Stages In Stabilizer Converter
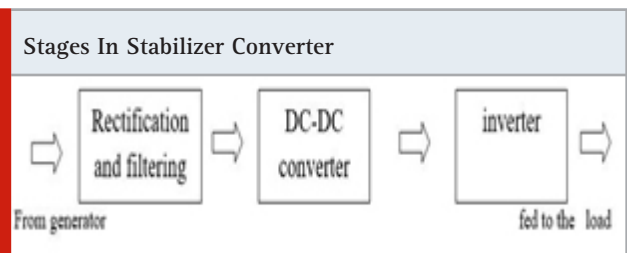
The above Figureshows the stages in stabilizing the non-uniform output waveform into stable waveform. Rectifier is to shift the negative cycle of an AC signal to a positive cycle producing DC signal, and then the signal also must be filtered to eliminate all the AC components on the waveforms. Inductor and capacitors are used for that purposes. Converters are used to convert AC supplyinto DC supply and inverters are used to convert DC supplyinto AC supplywith a clean signal for grid connections.

Types Of Stabilizer: Generally, direct AC to AC converter and AC-DC-AC Converter are the most frequent and widely being used in stabilizing the output signal. Both types of converter used to rectify the non-uniform AC signal into a smooth and stable signal.

Direct AC to AC converts AC signal to another AC signal with different amplitude and frequency. This type of converter contributes to less conversion losses compared to AC-DC-AC Converter because of the utilization of lesser circuit are connected in series. AC to AC converter can be implemented using cycloconverter, voltage

regulation (VR), and matrix converter. However, this converter is not suitable to convert non-uniform signal as it can only operates with a uniform signal.

AC-DC-AC converter is the most frequently used types of converters in stabilizing non-uniform signals as it can operate with non-uniform input signals desponding on the specs of system designed. This converter composed of inverter or rectifier which is AC-DC converter which subsequently connected to a DC-DC converter.

Current Technology For Wave Energy Stabilizer: The proposed power conversion architecture that comprises of a diode rectifier and DC-DC converter to separate active power and a partially rated active filter to supply harmonic and reactive power. The system is said to be cost-effective compared to a traditional fully rated power converter. The following figure shows the proposed power conversion architecture design for the paddle type WEC with grid-tied converter for three phase system which is active-filter based design.


Power conversion circuit
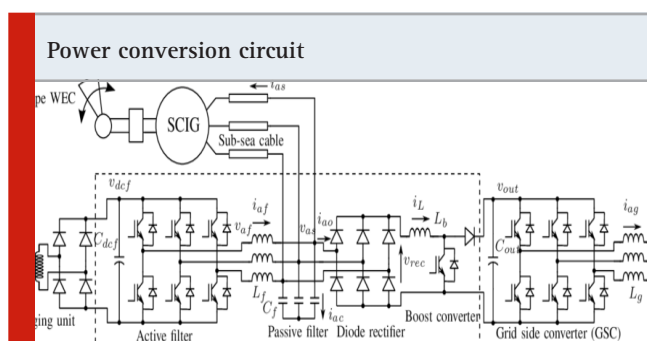
The active filter produces reactive power to the squirrel-cage induction generator (SCIG) and absorb the harmonics generated due to therectification of diode. The Diode Bridge and subsequent DC to DC boost converter to generate desired active power. At the output of the active filter, an LC filter is used. This LC filter is used to decrease the dv/dt of the converter voltage also to prevent the voltage spikes at the generator terminal.

The active filter also is controlled to take over the harmoniccurrent produces by the rectification of diode to sustain the generator current sinusoidal. Presence of the harmonics in the generator current can cause the increase of power loss and harmonics content in the torque.

The diode rectifier will rectify the output of the generator, and dc to dc boost converter controlled the dc current of the rectifier to generate the desired output. The drawback from this system is the machine is too bulky and the structure of the design is quite complicated design. This proposed design also suffers a high-power loss due to the active components. This system is quite cost consuming to be developed even the cost for it is quite low when compared to conventional stabilizer. The following figure shows the proposed conversion system utilizes the conventional fully rated back to back converter. This aims of this proposed system is to achieve highest

efficiency, lowest possible costs and also environmentally friendly system.

Back to back converter
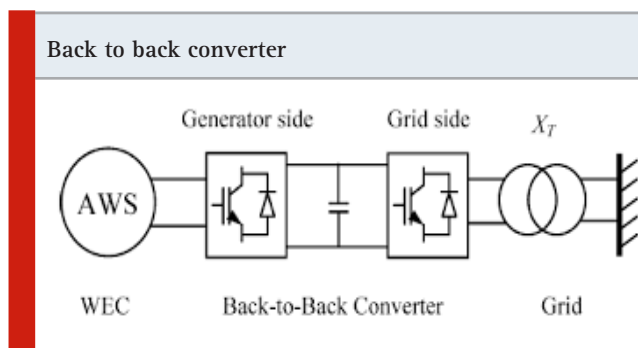
This converter arrangement is comprised up of two controlled voltage sources converters (VSC) that is associated with a capacitor. One of the VSC is at the generated side while another is associatedwith the grid side. The capacitor turns into the DC link and acts as the power storage as well as voltage sources for the converter. The fundamental advantage of the design is to reduces the size of acapacitor by introducing battery storage,anyways it has alimitation that only valid under regular wave condition. The application of the buck-boost converter circuit and the usage of battery as backup power. Under the impact of waves, the permanent magnet linear generator moves up and down with the waves high and lowpoints,so it is producing the unstable output waveforms.

The unstable waveform signal is rectified through the rectification of diode into direct current (DC). Then in the buck-boost converter circuit, the dc voltage is adjusted so that the voltage value has changed into stable DC current that can be used. The constant dc power then will be supply to the load. The stable power also will be given to the buck converter as battery backup to be recharged. Then, when the generator generates insufficient power, the battery will supply the constant voltage is given to the boost converter circuit for load.

The system proposed is working almost perfectly. However, the conversion of the dc voltage into stable DC current is not that efficient with the usage of the buck-boost converter. The amount of electrical stress on the electrical components is too high thus making the voltage conversion not efficient. Also, the usage of buck-boost converter requires a large converter or LC filter because of the high input current ripple to reduce the harmonics thus making the converter to be inefficient.

Proposed Design

Single Phase Linear Generator: The generator is actuated using a regular sea state and real wave condition motion that moved along with the generator translator. This translation motion on the translator generates magnetic flux. An EMF voltage is induced on its coil terminal as the magnetic flux flows through the path of magnetic circuit.

Stabilizer: Stabilizer design consists of rectifier, filter circuit and inverter.

Stabilizer Circuit Block Diagram Configuration
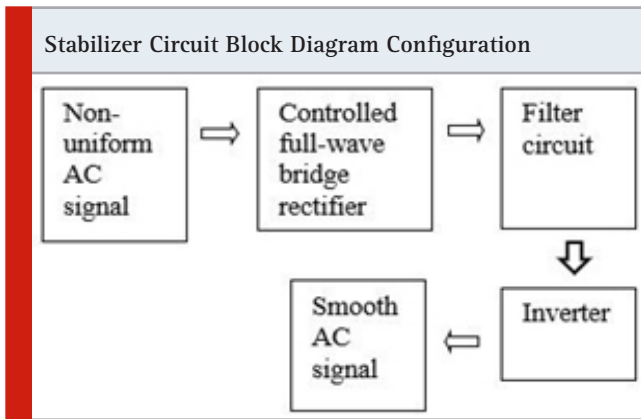
Controlled Full Bridge Rectifier: The function of the rectifier in this circuit is to flip the negative cycle of an AC signal to a positive signal. There are many methods that can be used to stabilize the non-uniform signal from the buoy generator. However, in this project, controlled full wave bridge rectifier is used because of the simplicity of the circuit which consists of only two pair of diodes.

This rectifier operates as two diodes will be turned on at one time and another two diodes are turned off. During the positive cycle, diodes D2 and D3 are turn on and in forward bias condition and diode D1 and D4 are turn off in reverse condition. During negative cycle, diode D1 and D4 are on while diodes D2 and D3 are off. The voltage of positive and negative cycle signal is inverted to positive cycle signal.

Filter Circuit: When the negative signal has been converted to a positive cycle signal, the signal need smoothen to remove or minimize the amount of ripple to produce a pure dc signal. Capacitor is used for that purposes by adding it parallel to the load side. It also eliminates all AC components on the wave form.

Filter circuit
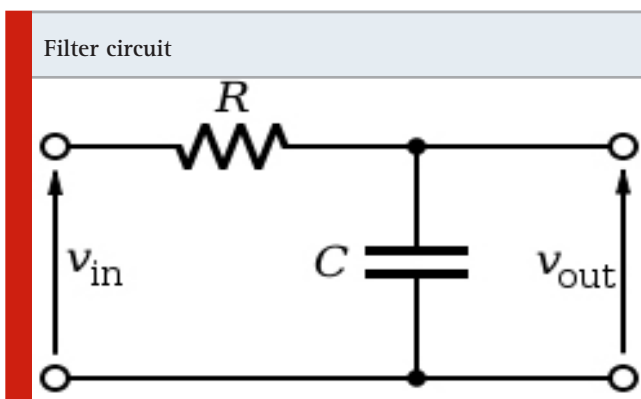
Inverter: The fundamental function of an inverter is to convert DC signal to an AC signal. For an inverter to the process, the DC signal should be cleaned, and ripple should be in tolerable range. PWM technique is used in inverter to convert the DC signal to AC signal. In inverter,

filter circuit is used to remove distortion. Pulse width modulation with inverter circuit generates smooth sine wave or AC signal.

Research Methodology: A research study is undertaken as the first step for this project. Literature review is conducted as a method of data gathering purposes from previous project and study related to the project. From this research study, wave energy converters and its working principle, current converters technologies suitable methods for designing the converter system is identified. Linear generator system is also studied as the system is accounted as part of the sub-tasks for this project.

The next steps are planning and designing the electronic converter. Modelling a linear generator is taken as the first step in designing only to get the random output generated from irregular waves as input to be stabilizer system later. Then, stabilizer circuit is designed. The designing process is based on the previous research and study taken to come out with an efficient design for sea waves. The stabilizer system is designed using MATLAN Simulink software.

After designing stage is done, the proposed design is then is simulated using MATLAB software. The non-uniform signals are made to generate and later will be fed to the generator to generate the non-uniform signal and then later will be fed to stabilizer. However, for this project, electronic converter works as an individual system so the input signal for the stabilizer is created to mirror the actual output of the generator. Then, the stabilizer circuit is simulated. Lastly, the designs of the stabilizer are compared according to the efficiency of converting non-uniform signal into smooth and clean AC signal.

Controlled Full Bridge Wave Rectifier With Filter Circuit Result

a) Non-uniform input signal: The following figure shows that the circuit for the input signal of the stabilizer. The signal is obtained from The non-uniform signal is created and injected manually to the stabilizer from the simulation. The amplitude and frequency of the v1,v2 and v3 are not same.
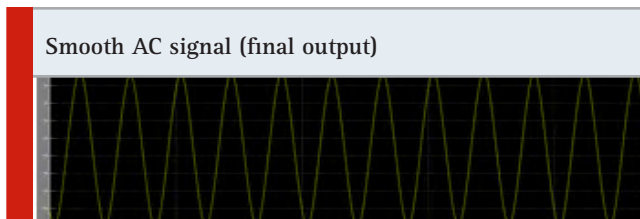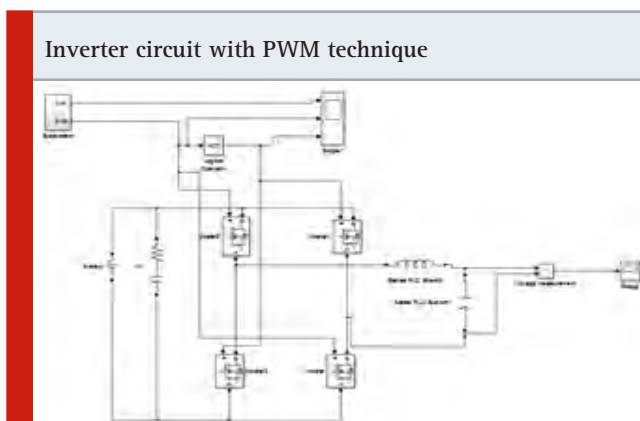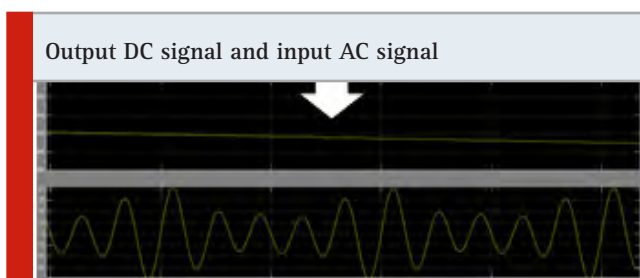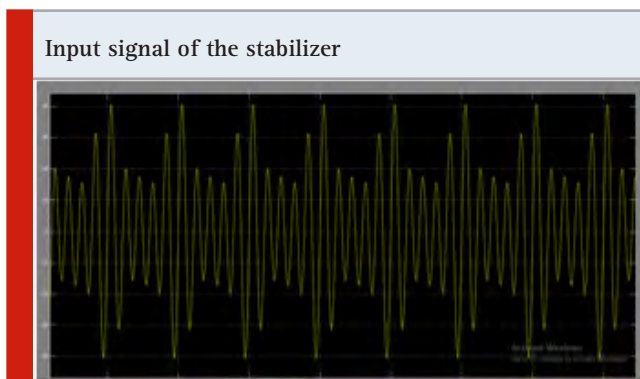
Rectifier with filter circuit
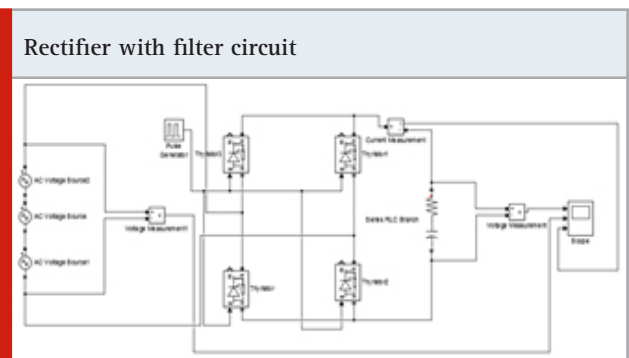
c) Inverter: The result of the proposed stabilizer is to produce smooth AC signal. Inverter consists of MOSFET which converts the DC signal into AC signal. Further, the

signal suffers from distortion, so the filter circuit is added with the inverter to generate the smooth AC signal.

Details of Input Signal		
	Voltage (V)	Frequency (Hz)
V1	24	60
V2	12	50
V3	6	40

Figure 20 consists of MOSFET and filter circuit with power supply. The inverter also follows the pulse width modulation (PWM) technique to convert the DC signal into the AC signal.

Input signal of the stabilizer

Output DC signal and input AC signal

Inverter circuit with PWM technique

Smooth AC signal (final output)

CONCLUSION

The above Figure shows overall conversion of the non-uniform output signal of a generator into a smooth AC signal. The non-uniform output signal from the generator is rectified and filtered to produce a constant DC signal. Then, DC signal is being inverted into a smooth AC signal for grid network connection or to be directly used to a load. It can be concluded that the stabilizer circuit can able to convert and stabilize the non-uniform output waveform of the generator into a smooth AC signal.

Recommendation: The stabilizer design for wave energy conversion needs to be further improved and modified to achieve more efficient system. A modification on the rectifier part can be further analysed and modified for more efficient voltage regulation. Other than that, designing a full-scale system that enables the stabilizer to be integrated with the grid should be modelled so that the stabilizer can be implemented as prototype.

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Industrial 4.0 Machine Miniature Automation

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ABSTRACT

The basic need for today's industry is two things. They are Digitalization and Intelligentization. To increase the Productivity in the world, we need to improve the advancement in the technologies that have been used in the industry. So to achieve that we have made a change in the existing system, in present scenario the data acquisition cannot be done with the existing PLC we can capture only the running data and we can store for few period of time up to 3-4 days. And the stored data cannot be accessed from anywhere only by getting near to the machine we can able to fetch the data. To overcome this we had setup additional sensors and PLCs (based on the working environment) around the machine which do not affect the existing system. By this implementation we can provide the necessary data like downtime, production etc. we can store the data for life time and can able to make desired report and the report and data can be accessed from anywhere, anytime around the world by using Smart phones, Tablets, Laptops etc.

INTRODUCTION

In the before centuries there were three different changes that have been used in the Industrial revolution to manufacture the products. The three revolutions that have been used in the industries are 1.Mechanism that have been used in water and steam power 2.Large number of productions in assembly lines 3.Automatic information technology.

During the First revolution of Industry that has happened on the year of 1780s has first introduced the water and steam power which is highly used for the mechanical production and it is highly used in the agriculture sector. Next, During the Second revolution of Industry, the large number of production is turned to be a primary means of production. The large number of production in the steel has turned the development in the Railway industry.

In the 20th century, the third revolution of Industry has been started. It is completely different from the first and second revolution of Industry, because the third revolution of Industry is completely based on Digitalization. During third revolution, there was a huge and mass development in computers and information and communication technology in theworld. During the Fourth revolution of Industry has brought the great changes in many professions. People have assigned with numerous number of tasks that have been used in daily life with high tech gadgets to make their life style easy. It helps to improve the life style of the peoples daily life in the world.

1.Plc (Programmable Logic Controller): PLC is the abbreviation of Programmable Logic Controller which is specially designed to work during the harsh industrial environments like high temperature, damp, waterless and dirty situation. PLC helps for automatic industrial processes which is highly used in the manufacturing of plant's assembly line, an core dispensation plant and a waste water action stand.

Figure 1: Industry 4.0
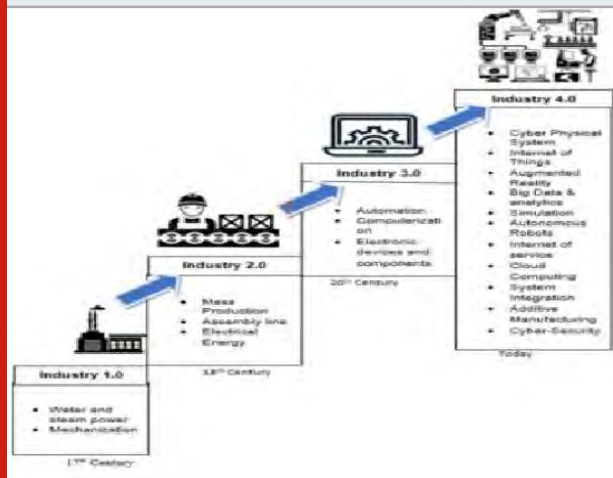
The personal computers which has power supply, CPU, Inputs and Outputs, Memory and Operating Software all these shares PLC. PLC has been used in all kinds of environment and the digital computers manages the electromechanical processes of an industrial environment.

Figure 2: PLC block diagram
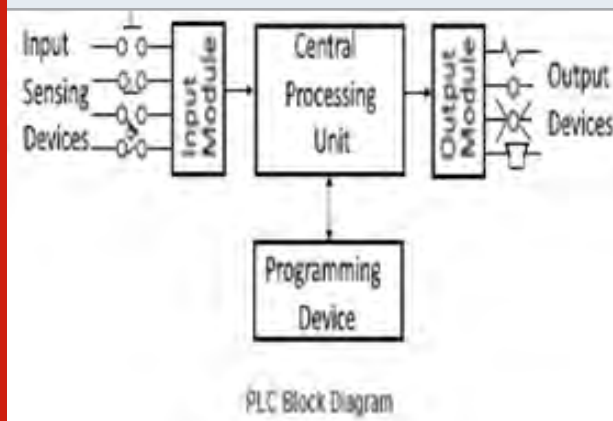
Hmi (Human Machine Interface): A Human-Machine Interface (HMI) means customer line or dash board which interlinks a humans with the screen where they can communicate with a machine which has been highly used in the manufacturing course.

HMI is the highly used for different types application such as the data can be easily visualized in the display, the it also used for the production of tracks like time,tags and trends, input and output of the machines can also be monitored by HMI. It also arrived in a various forms.

This is highly compared that how people communicate with air conditioning to increase or decrease the temperature using the 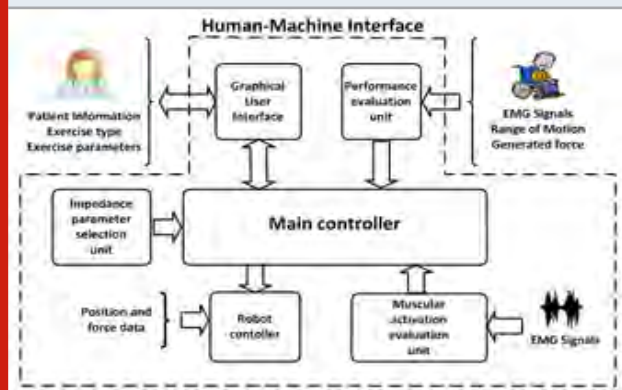remote in the home, a plant-floor machinist may help the HMI to increase or decrease the hotness in an manufacturing stream tank, and also capable to maintain the pump whether it is running or not.


Figure 3: HMI.block diagrm

HMIs has worked in a variety of forms, they may also used in screens on machines, in the monitors of the computers, in tablets but HMIs most wanted use is mechanical performance and progress.

3.Inductive Sensor: A inductive proximity sensor which may have a direct contact with target may help to detect the metal targets. Inductive Proximity Sensors are highly classified into three types. They are:1.The electromagnetic type which is highly used for the large frequency changes 2. The magnet which has attractive force.

To produce High frequency in the compelling ground in the oscillation circuit in the coil L. In order to the effect of electro magnetic induction, as the target have comes with the contact of magnetic field there flows an induction current. To increase the induction current flow, the target has to reach the sensor, which helps to increase the weight on the alternation course. Then, alternation reduces or give up. The changes can be detected in the sensor using the fluctuation position with the amplitude detect course and output detecting sign.
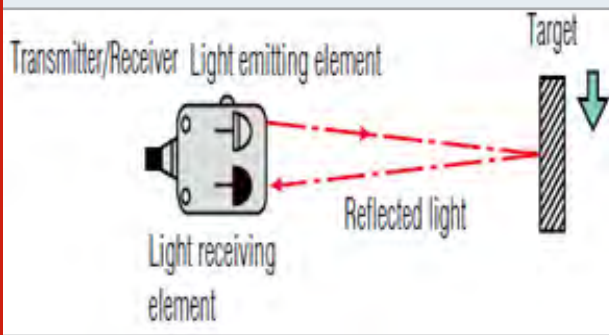

Figure 4: Inductive sensor
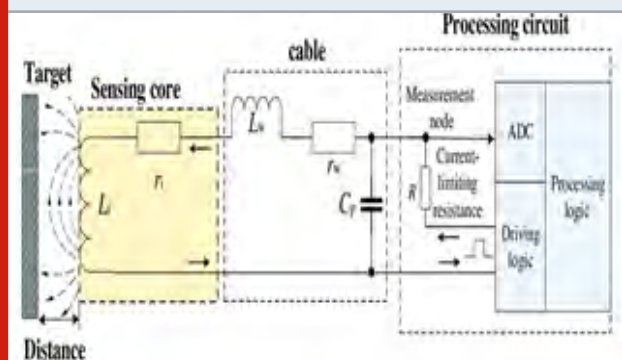
4. Photoelectric Sensor: The light emitting element can emits light with the help of photoelectric sensor. The single housing may consist of both the radiance emit and radiance being paid rudiments. The target sends the light rays to reach the sensor.

Table 1. Frequency Band with bandwidth

The sensor which is to be reflected are help to find the light rays that have have been diverted from the source point is photoelectric sensor.

• When the receiver is get separated from the transceiver , the source point which is placed between the transmitter and receiver, the light rays has been disturbed

Block Diagram

Figure 6: Block diagram
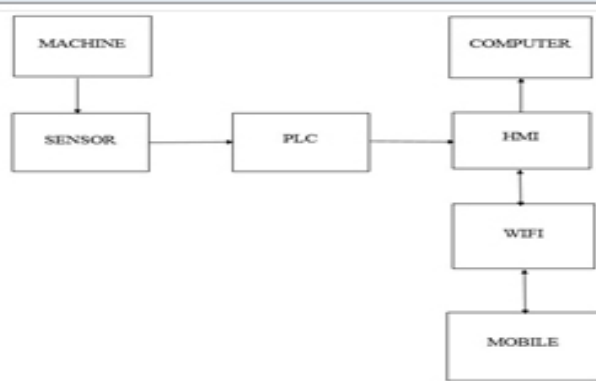
Project Output

Figure 7: Output graph

CONCLUSION

Thus the paper proposes that industrial 4.0 can be achieved by implementing the proposed method. If this is successfully implemented in every production industries it can full fill the needs of industrial 4.0 revolution. By this, digital factory can be achieved and production can be increased by overcoming the losses occurring during the production time and it can be can be easily tracked. By tracking the major problems can be reduced significantly. The proposed industrial 4.0 scheme is confirmed by undergoing multiple test results for different scenarios.

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Modeling and Simulation of Luo Converter for Photovoltaic Application

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ABSTRACT

To develop a stable and ripple free high output voltage by using solar powered positive output of parallel connected Luo converters. In conventional DC -DC converters do not satisfy the load requirements at high voltage applications like electric vehicles and DC motors drives, PV fed renewable energy systems. Also, it may possible to produce more ripples on output voltage of the system. So in this paper, positive output luo converter is proposed to achieve high voltage from the solar system. In order to get maximum power from a solar panel, the Perturb and Observe(PO) method is used for switching pulses to luo converter. In simulation, the PID controller has been developed in the feedback system with different input voltage to maintain steady state operation under variable load conditions. This system capable of providing low ripples, high output voltage with a stabilized current from the low input voltage and less duty cycle. In addition, the utilization of inductors, leakage inductance problem and voltage ripples are reduced

KEY WORDS: CONVERTER, PHOTOVOLTAIC, MOSFET, PARALLEL CONNECTION, VOLTAGE REGULATORS.

INTRODUCTION

The Isolated DC-DC converters are typically used for high power applications due to easy control, more efficiency , large voltage gain, steady state input current, and contents of low ripples. So recently, many researchers have concentrated on applying luo converters to renewable energy systems[1]. However, the DC – DC converters finds their advantages in the renewable energy

conversion processes. There are major categories types of DC-DC converters are buck, boost, buck-boost, etc are used depending upon the need of output power ratings of the loads to be connected.[2]-[5].Many DC-DC converters like buck-boost converters, cuk converters as well as SEPIC converters are used to obtain the constant output. But the switching losses and losses in the energy storage elements are very high for high current[6].

Hence the Luo converter is preferred for this project because of its following advantages[7] (i) To maintain stability under any circumstances, (ii) to achieve better static and dynamic characteristics even though any disturbance occurs in supply side and changes in load. (iii) It has ability to reduce ripple voltage and current levels without reversing polarities.

The proposed system consists of a renewable energy source, here used is solar panels, each connected to a Luo converter module that results in sharing of constant voltage for various loads. Here is used for providing a feedback system with PI control methodology. The proposed system involves a parallel connection of two positive output Luo converters being supplied from a solar panel. The Luo converter set up performs the DC-DC conversion by boosting up the voltage[8].

The components are interconnected to the STM controller that performs voltage switching operations. The STM controller forms a closed loop system that results in providing a continuous constant supply of voltage. This constant voltage at the output can be utilized for the charging of batteries at different ranges. The proposed system block diagram is given in Fig 1. The Luo converter set up had been designed using inductors, voltage regulators, diodes, transistors, STM controller, filtering capacitors, resistors of different ranges and crystal oscillators[9]-[10].

Figure 1: Block diagram of Proposed System
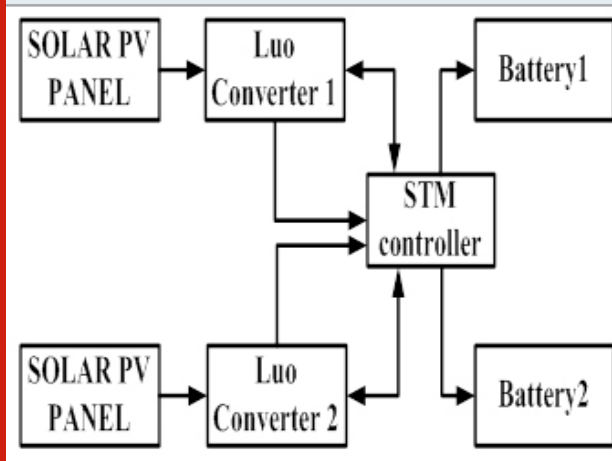
The main causes for deviations from the fixed output voltage are variations in the input power, load distortion , parametric divergence and inaccuracy in voltage and current evaluation. A slight imbalance in the output voltages is sufficient to originate circulating current, that may experience to deviation in current distribution. This effect will deteriorate the system performance. The STM controller is dumped with the program to prevent the mismatches in the current thus maintaining a constant voltage at the output.

Ii. Operational Principle of Proposed Converter: The proposed converter is a positive output super lift converter. The converter exists of a capacitors C1 and C2, two diodes D1 and D2, Inductor L , power electronic switch S, and load resistance R. The proposed Luo converter is shown in the figure 2.

The process of above converter can be inclined in two different modes i.e., the switch S in ON and OFF state.

Mode 1: When the power switch S is turned ON the voltage across the capacitor C1 is energized up to supply voltage. The inductor current iL1 draw over inductor L1 which develops the supply voltage Vin at the time of switch S ON[11]-[13]. Mode 1 operation of luo converter is shown in Fig3.

Figure 2: LUO Converter
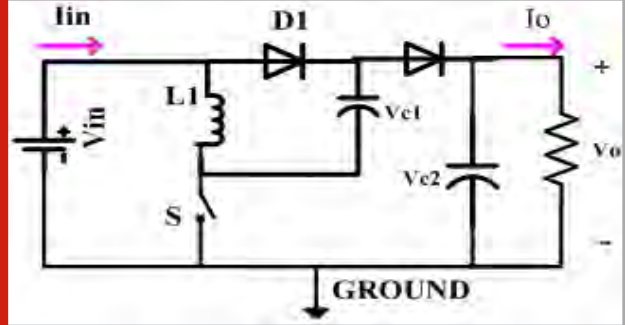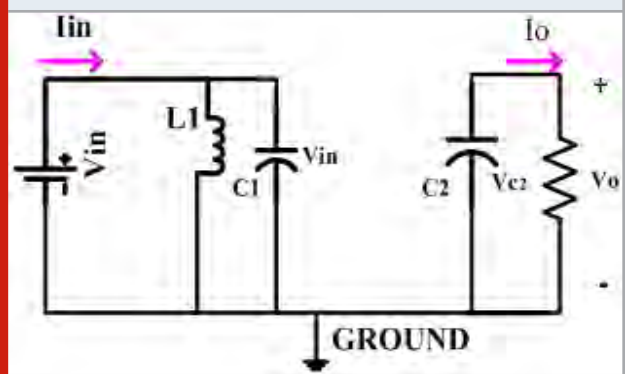

Figure 3: Luo Converter Mode1

Mode 2: During the switch S is inactive, the energy reserved in the Inductor reduces and the inductor current iL1 decreases with voltage(Vo-2Vin Mode 1 operation of luo converter is shown in Fig 4.

Figure 4: Luo converter in Mode 2
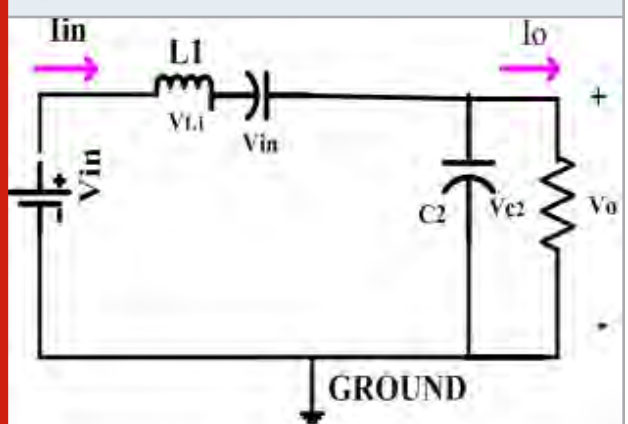
The inductor current can be given as [14]

$$\Delta iL1 = \frac{V_{in}}{L1} DT = \frac{V_o - 2V_{in}}{L1} DT \qquad (1)$$

$$V_o = \frac{2-D}{1-D}V_{in} \qquad (2)$$

The voltage Transfer gain can be given as[15],[16]

$$G = \frac{V_o}{V_{in}} = \frac{2-D}{1-D} \qquad (3)$$

Simulation Results: Modelling of solar panel and luo converter is developed then converter performance is analysed using MATLAB/SIMULINK software using the circuit parameters as shown Table 1.

Table 1. Circuit Parameters		
Parameter's name	Symbol	Value
supply voltage	V in	32V
Output voltage	V out	151V
Capacitors	C1,C2	10mF
Inductor	L	65mH
Switching Frequency	Fs	25000 Hz

The simulation design of the proposed converter is shown in the figure 5.

Figure 5: Circuit of proposed converter
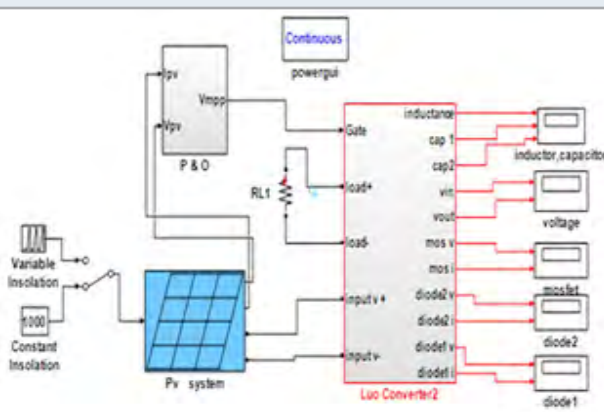
The output from the solar panel 32 V is given to the Luo converter and it produces output voltage up to 150V.

Figure 6: Luo converter output
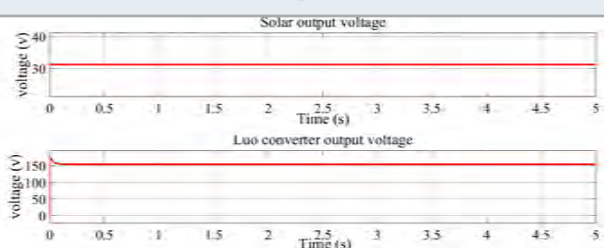
Fig 7,8 and 9 shows the MOSFET voltage and current and Diode voltage and current during the switching of the converter. The changes in current waveform shows the ripple in the current.

Figure 7: MOSFET output voltage and current
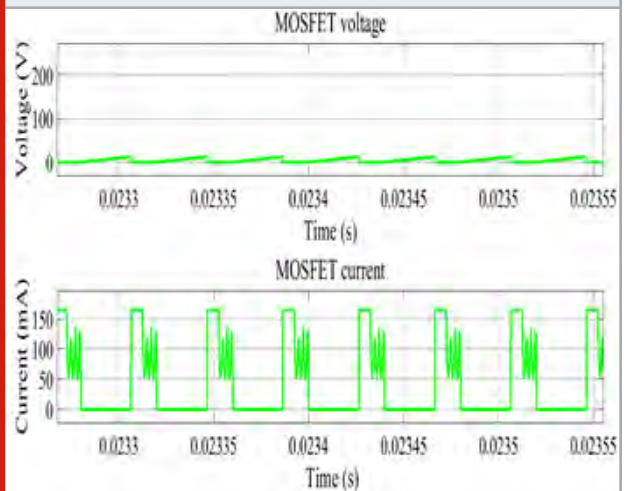
Figure 8: Diode output voltage and current
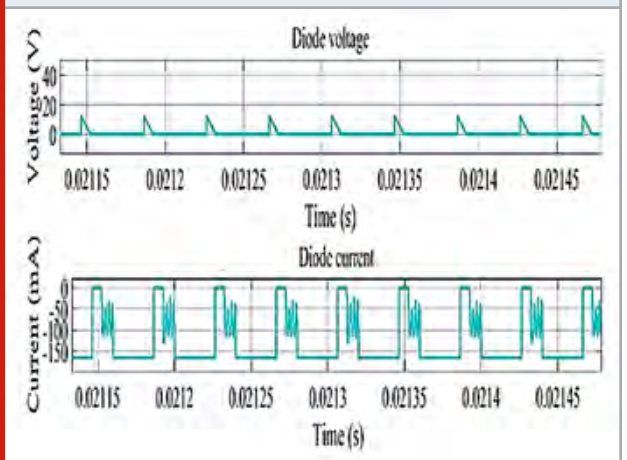
Figure 9: Inductor and Capacitor output

CONCLUSION

We report here the modelling of solar panel and positive output luo converter are developed to achieve less ripples in the system. The P& O algorithm has been developed to extract the maximum power from the sun. The Simulation outcomes shows, the proposed luo converter is capable of providing high output voltage with a stabilized current and convenient to involve in high voltage applications. Bifacial PV solar array is to be used with the Luo converter in the future development of the proposed work. Thus providing a maximum power production in small area.

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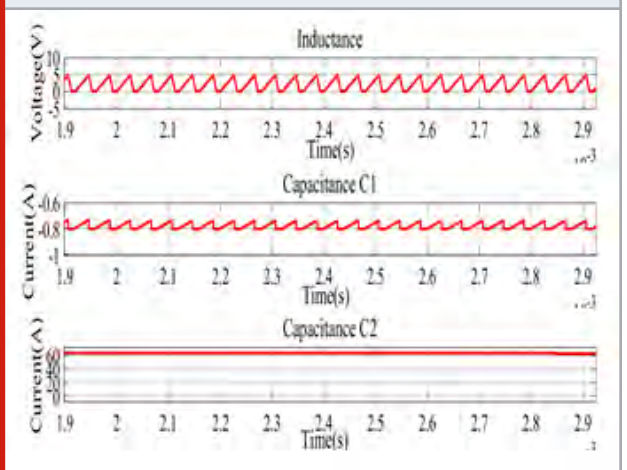A.Manikandan, N.Vadivel "Design and implementation of luo converter for electric vehicle applications" International Journal of Engineering Trends and Technology (IJETT) – Volume 4 Issue 10 - Oct 2013. https://ijettjournal.org/volume-4/issue-10/IJETT-V4I10P130.pdf

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Design of Five Level Cascaded H – Bridge Multilevel Inverter

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ABSTRACT

The paper describes about the design of a five level cascaded H-Bridge multilevel inverter using PDPWM methods. By using the phase disposition pulse width modulation technique we can get better switching angles to get good harmonic reduction. By using the mathematical approach from the different modulation index we can compared the results of the output of 5 level cascaded MLI.

KEY WORDS: TOTAL HARMONIC DISTORTION, MODULATION TOPOLOGIES, MLI- MULTI LEVEL INVERTER

INTRODUCTION

As far today's scenario the usage of energy is increased tremendously and the demand also get increased. The fossil fuel is the leading non renewable energy source providing energy to the world. By increasing industries and vehicles the utilization of energy is getting increased. So researchers and scientist had move to alternate sources of energy and they named it as renewable energy some of the renewable energies are hydro, tidal, solar and wind etc. In these renewable energy sources,energy which we are get from sun as solar energy is leading and trending one among them. The solar energy is get energy from photo voltaic cells and it produce direct current. Now a world major usage of source is alternating current and this current only the industry and other purpose used.

But from photovoltaic system we can get only direct current we have to convert it to alternating current in that inverter is the main thing to this.

2 Multilevel Inverter Concepts: Multilevel inverters concept attracts academia as well as industry over wide range. The wave forms with low harmonics are united to form the two level inverter. There is a possibility if the no of levels increased then the sinusoidal waveform is achieved. Hence, it is possible to achieve lower harmonics distortion and only issue is voltage imbalance. The main problem is that if there is an increase in switch will cause complexity in circuit.
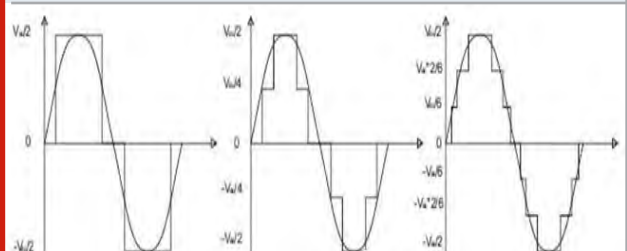

Figure: 2.1. fundamental frequency output waveform for different level

In general various types of switching topology in multilevel inverter which can have further ability to modulate the voltage. It is important to organize the various properties of multilevel inverters to get optimized output. The basic multilevel inverter topologies includes: cascaded H Bridge inverter CHBI, Capacitor clamped multilevel inverter CCMI, Diode Clamped Multilevel inverter DCMI.

2.1 Cascaded H-Bridge Multilevel Inverter (CHB-MLI): In order to get the sinusoidal output voltage the h bridge inverters are connected in series this is the main objective of multilevel inverter. The full bridge inverter is shown in the Figure 2.2. In cascaded inverter every module is added in order to two voltage level by extending the every module should added. And 5 level cascaded HBMLI itself a one full level bridge inverter.

Figure 2.2: 1 phase 5 level MLI
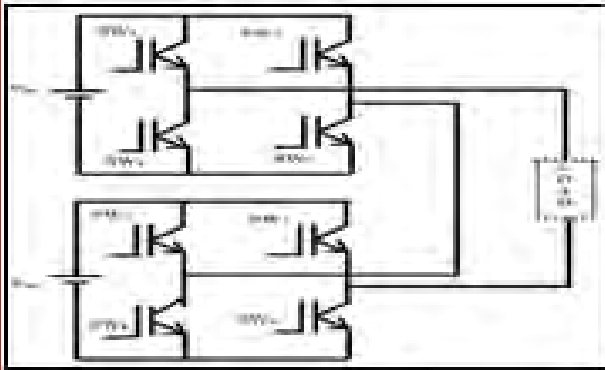
3 Modulation Techniques for Multilevel Inverter: The multilevel inverters has many topologies in order to achieve best result in output and modulate. It has two methods which is fundamental switching frequency method and high switching frequency (Pulse Width Modulation) .

3.1 Pulse Width Modulation Techniques: For the high value of switching frequency carrier waves the different pulse width modation techniques are used and it is compared with the reference waves in order to generate the out put wave of sinusoidal in the two level MLI. the phase shifting techniques are used in the output voltage to reduce the harmonic content.

Figure.3.1: Reference and carrier wave
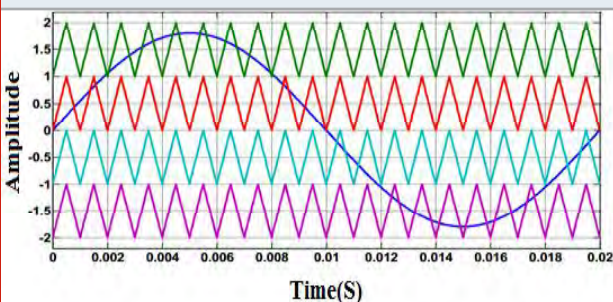
4 Operating Modes of Five Level Cascaded H–Bridge Multilevel Inverter: Mode1: +2Vdc: in this Figure 4.1. It explains the switches are SW3, SW4, SW7, SW8 are in opened position and the switches are SW1, SW2, SW5, SW6 are in ON condition by this mode of operation we can get the output of +2Vdc.

Figure. 4.1: Circuit diagram to get output voltage of +2V$_{dc}$
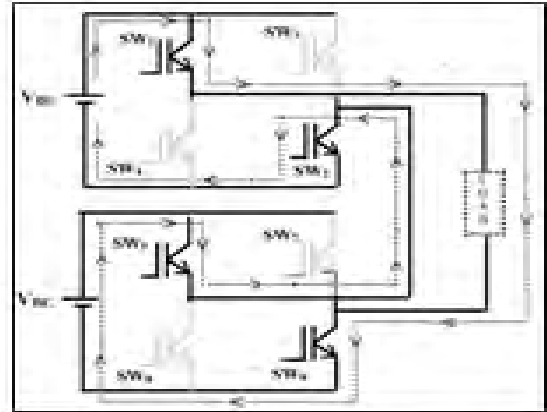
Mode2: +Vdc:in this Figure 4.2. It explains switches SW3, SW4, SW7, SW5, are in closed position and the remaining switches are open or On condition and by this condition we can get the output of +vdc.

Figure.4.2. circuit diagram to get output voltage of +V$_{dc}$
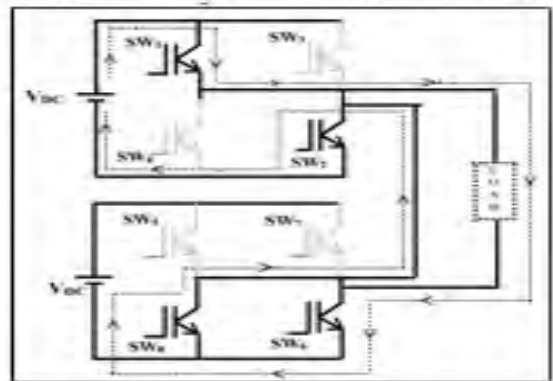
Figure.4.3 circuit diagram to get output voltage of zero
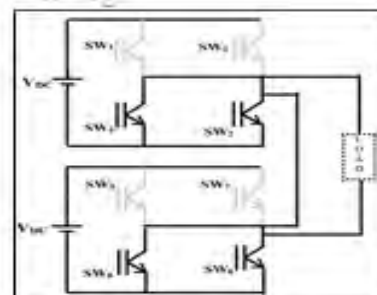
Mode 3: 0:in this Figure 4.3. It explains current flow will be zero and the output voltage also to be zero it explains by triggering the switches in lower leg.

Mode4: – Vdc:in this figure Figure 4.4. It explains the switches SW1, SW2, SW7, SW5 are remains close and the remaining switches are in On condition like SW3, SW, SW7, SW8. this mode of operation we can get the - vdc as output and the flow of current should be opposite to load current.

Figure. 4.4. circuit diagram to get output voltage of –V$_{dc}$
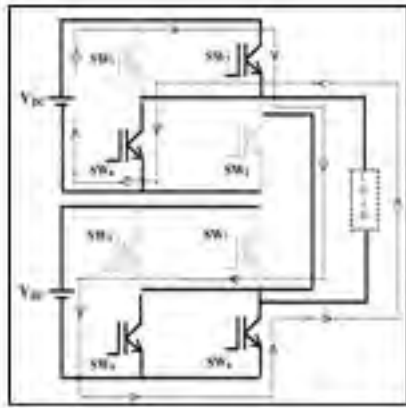
Mode 5:– 2Vdc:in this Figure 4.5. It explains switches of SW3, SW4, SW7, SW8 are remain on and remaining switches like SW1, SW2, SW7, SW5 are in close condition. In the circuit diagram the current flow should be invert to the load current by this mode of operation we an get - 2vdc as output voltage.

Figure.4.5: circuit diagram to get output voltage of –2V$_{dc}$
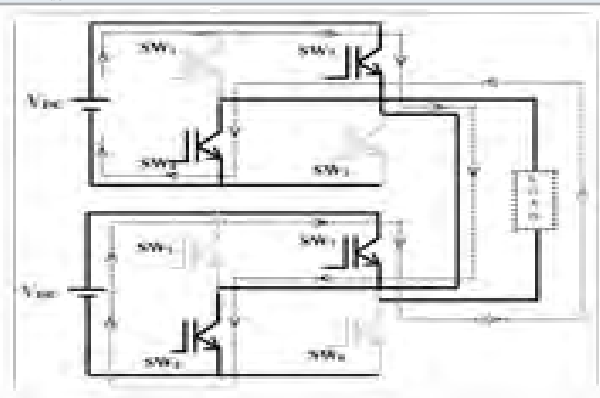
5 Simulation Results of: Fig 6.1 shows the simulation diagram of cascaded HBI using PWM technique is done by using MATLAB/SIMULINK software.

The cascaded h bridge multilevel inverter design values are given in the table 5.1. For the switching frequency modulation index 1 of 5 level cascaded H bridge inverter of output current and output voltage is shown in figure

of 5.2 and from the modulation index of M=1 and 0.8 the switching frequency is used are 2khz, the 5 level cascaded HBO outputs of output current with harmonic spectrum is shown in figure.5.3.

Figure.5.1: Simulation diagram of CHBMI using PD-PWM technique
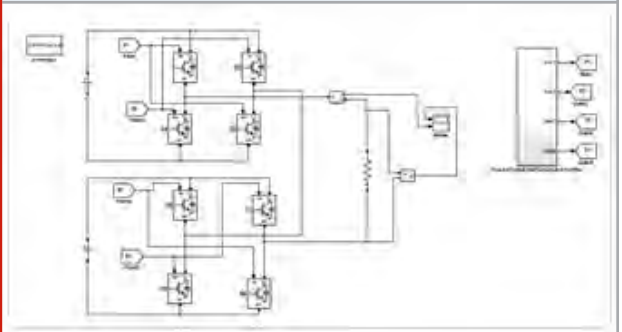
Table.5.1 Design values for HBMI

S.No.	Parameter	FIVE LEVEL CASCADE H BRIDGE INVERTER
i.	Input Voltage	130V
ii.	Load	R=60Ω
iii.	Switching Frequency	1kHz and 2kHz
iv.	Modulation Index	0.8 and 1

Figure.5.2 (a).voltage Output and (b).current Output
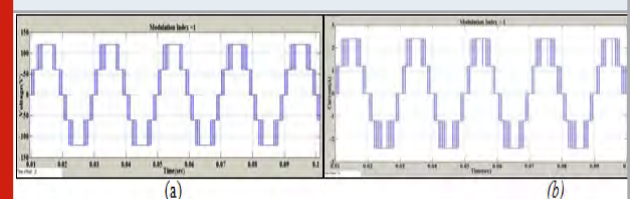
Figure.5.3 output current waveform of Harmonic Spectrum for various modulation index
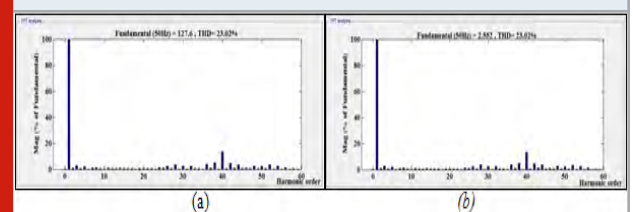
Comparison of THD values for modulation index 0.8 and 1 and switching frequencies of 1kHz and 2kHz is given in the table.5.2.Also the Comparison of THD for PDPWM and SHE technique is for 0.8 and 1 modulation index and 1kHz and 2kHz switching frequencies is given in the table.5.3.

Table.5.2 different modulation index comparison table

Switching frequency(2kHz)		Switching frequency(1kHz)		
Modulation index		Modulation Index		Parameter
1	0.8	1	0.8	
24.4%	38.6%	28.7%	39.2%	Output Voltage
25.3%	38.6%	28.7%	39.2%	Output Current

Table.5.3 THD comparison for PDPWM and SHE technique

	SHE		PDPWM	Total
7th harmonic elimination	5th harmonic elimination	3rd harmonic elimination		Harmonic Elimination
22.59%	23.38%	18.54%	26.64%	%THD for voltage
22.59%	23.38%	18.54%	26.64%	%THD for current

CONCLUSION

In the paper work we have discussed design and analysis of about 5 level cascaded h bridge multilevel inverter from that we can get the output of total harmonic distortion , inverter output voltage and inverter output current.In the inverter the switching pulse is generated by using Phase Disposition PWM.In order to reduce the harmonic content 3 rd order, 5th order, 7th order of the inverter by optimal switching angles and by using the MATLAB SIMULINK software results are verified. The results with the modulation index of the value of 1 & 0.8 is compared with the THD output, and the results are get by using switching frequencies of 1kHz and 2kHz.

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Smart Multi–Sensor Observation Framework for Patients

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ABSTRACT

The IOT-primarily based fitness mode care for sufferers as well therapist lots of based on comforts; docs could identify sufferers in very soon clear checked wellness records. However, medical therapist can develope a incorrect prognosis about this affected person's sickness, whether this wellness records saved at this server become changed or disappeared into an outside problem otherwise control breakdown. Therefore, it's of remarkable significance towards confirm this honesty about this long suffering fitness facts saved about this server. Today's speedy boom of elderly populations and developing older issues coupled with the superiority of obstructive sleep apnea and different health related troubles have affected many elements of society .This has brought about high needs for a higher healthcare tracking and treatments centers. Patient monitoring systems is the term for all the numerous gadgets which can be used to supervise sufferers. One class of such gadgets is gadgets that signs if the affected character gets proper right into a crucial country. In our proposed method makes a speciality of to screen and initiate alert to medical doctors approximately the sufferers at some factors of fluid adventure injections. The proposed device incorporates of sensors if you want to act as a degree sensor for monitoring the essential degree of the fluid within the fluid bottle. Whenever the extent of the fluid reaches to the pre-described important level, then the nurses, caretaker, docs could be alerted through the buzzer .This proposed gadget may be utilized efficiently in homes in addition to hospitals

KEY WORDS: HEALTH CARE;APPLIED COMPUTING; COMPUTER SYSTEM ORGANISATION; REMOTE MEDICINE.

INTRODUCTION

Emergent fitteness guidance has end up an important provider about this rising fee on superior residents. Fitness observation , healing, and assist livelihood to this aged with curatively challenge human beings act as rising task since this need faultless system among humans, scientific units, about scientific as well as public carrier companies.

They inspire this want used little cost, low-electricity, dependable, and elderlies and bodily confront citizens.

The Internet of Things (IoT) stage offers associate assureequipment toward reap this abovementioned fitness steerage work, as might additionally develop this physical carrier structures IoT placed on systems might exist worn toward gather this wanted records regarding this person together with his climate surroundings regarding speak this statistics cellular, whereby his become handled as well as saved to trailing this records on this buyer .This each property by exterior machines and check can permit used for likely protective assess (e.g., ahead forecast associate coming cardiac caress) otherwise activity on the spot care As it's far made obvious from the preceding discussion, wearable structures for fitness monitoring want to fulfill sure strict clinical Criteria while running

below numerous ergonomic constraints and widespread hardware useful resource limitations. More in particular, a wearable health-monitoring system layout needs to don't forget numerous wearability criteria, for instance, the weight and the scale thing of the gadget need to be kept small and the device have to no longer avert any of the person's actions or actions.

Furthermore, radiation concerns and feasible aesthetic problems need to be accounted for. In addition to that, the safety and the privacy of the accrued private clinical information need to be assured via the gadget, even as electricity intake needs to be minimized to increase the gadget's operational lifetime. Finally, such structures need to be inexpensive to ensure extensive public get admission to to low-fee ubiquitous health-monitoring offerings.

The previous stated parameters of a wearable health monitoring system highlight the truth that designing such a gadget is a completely tough assignment considering a lot of distinctly constraining and frequently conflicting necessities need to be taken into consideration from the designers. Furthermore, it's miles understandable that there may be no unmarried best design for such structures, but instead the tradeoff between "antagonizing" parameters must be balanced primarily based on the particular place of utility.

Architecture of a wearable health-monitoring system
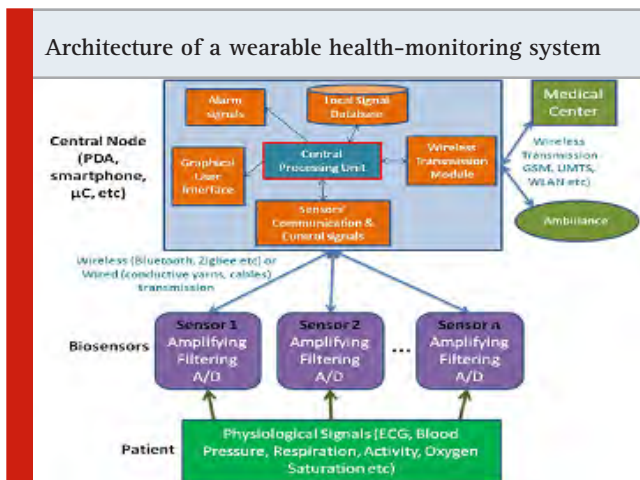
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Existing System: Real-time length of health parameters of critically sick sufferers which includes coronary coronary heart charge, pressure level, blood-oxygen saturation, temperature, and plenty of various parameters has find yourself a commonplaceThere square measure several trailing systems in scientific centers accustomed acquire and reveal affected person's fitness.The health info square measure then utilised by clinical docs to come up with the right preference.Critically unwell sufferers need correct observance and alarming device in some some time within the future in their everyday lifestyles.

The return of these activities throughout the already dark time reasons sleep fragmentation, which ends in daylight somnolence, primary to, among others, a lower in paintings performance and a sophisticated On high of the somnolence, patients with SAHS have AN elevated risk of growing vessel co morbidities. Therefore, nicely regular prognosis and remedy of SAHS is important.

Sleep stages and respiration activities square measure, in most worldwide places, manually scored the employment of these PSG recordings. so as to form positive uniformity amongst evaluation of sleep analysis, the yank Academy of Sleep drugs (AASM) advanced a group of evaluation laws in line with the AASM laws, all metabolism occasions got to previous longer than ten seconds, And while flow amplitude decreases with further than ninety you are the event.

Hypopnoea occasions, then again, exceptional desire a decrease of at the smallest amount half-hour, followed through the employment of each AN arousal or AN atomic number 8 de-saturation of at For the remainder of this text, the term symptom activities are used as a worldwide term representing every apneas and hypopneas, besides a transparent distinction is created some

Pulse oximetry could be a excellent length technique for this as it's miles reasonably-priced, unassertive and swish to installation in an exceedingly domestic surroundings. voluminous wearable pulse measuring device answers square measure already offered to be had taking place this bazaar to will exist accustomed get the SpO2 indicator in the course of sleep.

Disadvantage
- Every information of the patient must be monitored manually.
- It might not work, if the wi-fi infrastructure of the machine receives modified.

Proposed System: Proposes the IoT based totally monitoring of fitness index of Elder humans. The machine will reveal Elder humans and facilitate looking after their health. So green clinical services may be

provided at suitable time. Here Pressure sensor, pulse sensor and temperature sensor and gyro sensor are interfaced with controller a good way to stumble on the body temperature, pressure, and pulse and frame second.

In any case of emergency buzzer will activate for the purpose of alerting the neighbour. Furthermore, the Monitored parameters are updated to the IoT. This device uses LCD for showing monitored parameters. Here makes use of the arduino controller for controlling average gadget.
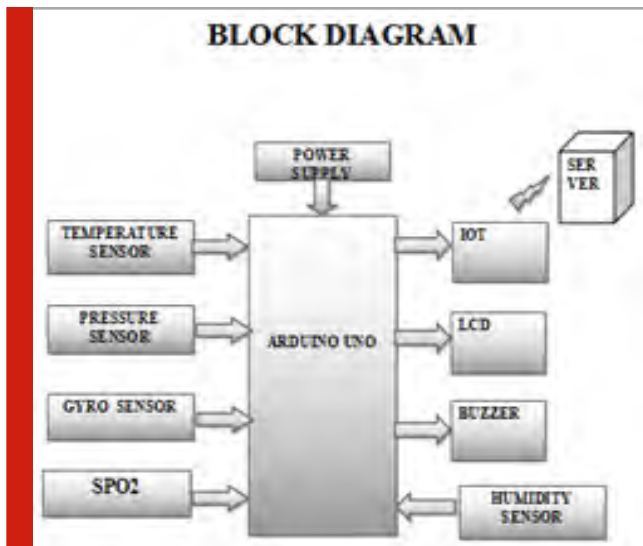
Block Diagram of Proposed System

Linear Power supply: An AC hopped-up linear energy deliver typically makes use of a machine towards remodel this power as of this barrier vent (energy) towards an one of a type, typically a lesser power. but that familiar supply DC, an controller is used. A capacitance is used to simple the pulsing last from the rectifier. Some very little periodic deviations from clean direct gift day will keep, it truly is believed as ripple. These pulsations arise at a frequency related to the AC power frequency (as associate instance, a over one in every of fifty or sixty Hz).

Transformer:
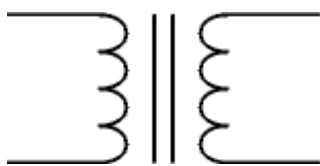
Transformer

Transformers alternate AC power as of single electricity to each one of a kind with small lack of strength. Transformers fashion most effective with AC and generally this will be regularly one all advised the motives why cores control is AC.

Step-up transformers boom power, modification of magnitude transformers deflate energy. Most power

components use a electric device to scale back the hazardously immoderate energy voltage (230V in UK) to a more secure low voltage.

Bridge Rectifier: A bridge rectifier area unit typically created exploitation four man or female diodes, even though it is additionally available in specific correspondence hold this four diodes required. It is noted as a entire-wave rectifier as a result of it makes use of the whole AC wave (every superb and terrible sections). 1.4V is applied up at durations the bridge rectifier due to the fact each diode makes use of 0.7V while carrying out and there ar continuously diodes engaging in, as proved within the diagram below. Bridge rectifiers are rated with the aid of exploitation the use of the most cutting-edge they'll pass and additionally the most opposite voltage they're in an exceedingly position ridge rectifier to resist .Please see the DIODES net web site for extra know-how, that embody pictures of ridge rectifiers.
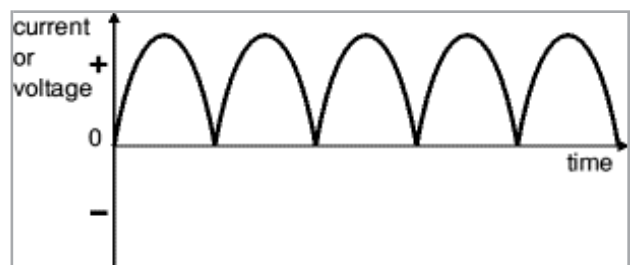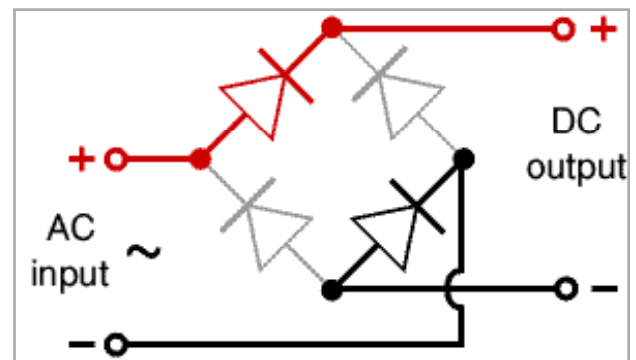
Smoothing: Smoothing is completed through using a large rate electrolytic linked crosswise this DC deliver toward take steps because an basin, activity cutting-edge-day towards this return whereas this various DC power as of this controller is diminishing. This figure display this wrinkled varied DC (dotted line) and so the ironed DC (strong line). The capacitor fees speedy on the purpose of the height of the various DC, thus discharges as a result of it sources modern to the output.
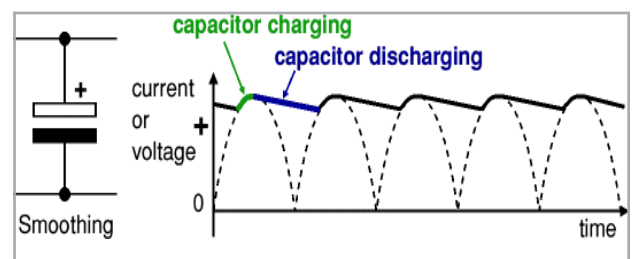
Regulator; Voltage regulator ICs unit of measurement to be had with constant (generally five, twelve and fiftenV) or variable output voltages. This're rated by the utmost fashionable they are able to bypass. Negative voltage regulators unit of measurement out there, significantly to be used in twin resources. Most regulators embrace variety of processed safety from excessive cutting-edge-day.

The LM78XX series of three terminal regulators is obtainable with a lot of secure production power creating it useful within a very huge quite packages. one among these is available on card law, pushing aside the distribution problems associated with unmated issue regulation. The voltages to be had permit these regulators to be employed in common sense systems, instrumentation, HiFi, and distinctive solid country digital machine. though designed primarily as constant voltage regulators these gadgets could also be used with external additives to learn adjustable voltages and contemporary-day ('overload safety') and warming.

several about this set electrical device ICs have three guide as well appear to be strength transistors, at the side of the 7805 +5V 1A controller verified above this correct. This embody a gap used for fasten warmth drop but vital warming ('thermal protection').

1. cathode controller
1. Load fasten
2. Floor fasten
3. Deliver fasten

That control this fine power
2. Negative controller
1. Floor fasten
2. Load fasten
3. Deliver fasten

That control this terrible power
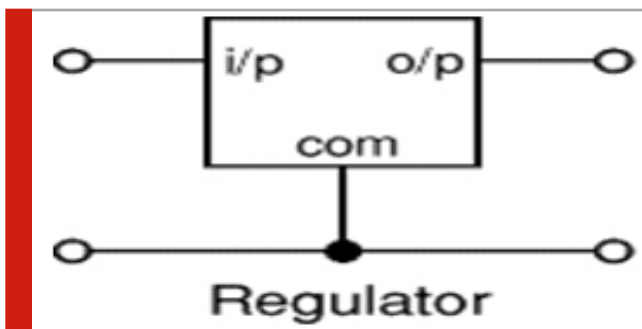
ARDUINO

PINS General Pin functions:
LED: there's a integrated crystal rectifier pushed by approach of approach of digital pin 13. once the pin is HIGH fee, the crystal rectifier is on, once the pin is LOW, it's off.

VIN: The input voltage to the Arduino/Genuino board whereas it's miles the usage of an out of doors power give (rather than five volts from the USB association or special regulated strength supply). you will deliver voltage through this pin, or, if providing voltage via the electricity jack, get admission to it via this pin.

5V: This pin outputs a regulated 5V from the regulator on the board. The board are stocked with power either from the DC energy jack (7 - 20V), the USB instrumentality (5V), or the VIN pin of the board (7-20V). offer voltage through the 5V or three.3V pins bypasses the regulator, and may hurt the board.

3V3: a 3.Three V give generated by victimization the on-board regulator. most up to this point draw is fifty mA.

GND: Earth pins.

IOREF: This pin at the Arduino/Genuino board offers the voltage reference thereupon the microcontroller operates. A nicely designed protect can take into account the IOREF pin voltage and choose the high-quality electricity offer or permit voltage translators at the outputs to paintings with the 5V or three.3V.

Reset: usually accustomed feature a push button to shields that block the best at the board.

Temperature Sensor: A humidness device senses, measures and sometimes reports the ratio at intervals the air. It measures each wet and air temperature. ratio, expressed as a p.c, is that the quantitative relation of actual wet at intervals the air to the excellent quantity of wet air at that temperature will maintain. the hotter the air is, the a lot of wet it's able to hold, therefore ratio changes with fluctuations in temperature.

Humidity sensors stumble on the ratio of the on the spot environments during which they'll be positioned. They live every the wet and temperature among the air and specific ratio as a proportion of the quantitative relation of wet within the air to the foremost amount which will be command within the air on the fashionable temperature. As air turns into hotter, it holds bigger wet, that the ratio changes with the temperature.

Most humidness sensors use electrical phenomenon size to make your mind up the number of wet within the air. this kind of size is predicated on electrical conductors with a non-conductive chemical compound motion picture untruthfulness among them to make Associate in Nursing electrical field among them. wet from the air collects on the motion picture and reasons changes among the voltage degrees some of the two plates.

Pressure Sensor: Together among temperature, strain is one of the maximum essential bodily portions in our environment. Pressure is a huge parameter in such diverse disciplines as thermodynamics, aerodynamics, acoustics, fluid mechanics, soil mechanics and biophysics. As an example of important commercial programs of strain dimension we may also recollect electricity engineering. Hydroelectric, thermal, nuclear, wind and other flowers generating mechanical, thermal or electrical power require the regular tracking and manage of pressures:

Figure ;Pressure Sensor
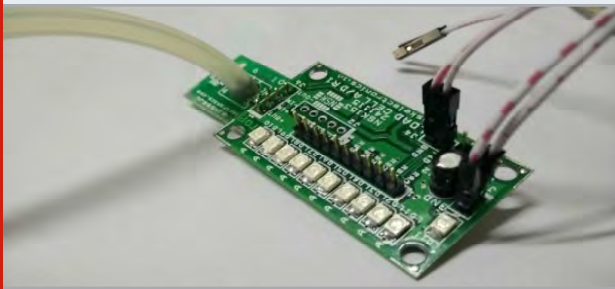
The equation of a perfect gas is: pV = nkBT p: pressure n: range of molecules T: temperature V: volume kB: Boltzmann constant.

GYROSENSOR– ADXL335

Acceleration is a manner wherein tempo is modified with appreciate towards point and that far an vector quantity likewise, speed be an pace also way. There are methods for clearing up speeding up of something primary single is exchange in pace and 2nd one is trade in route. Sometimes each are changed concurrently. If we speak approximately ADXL 335 measuring system, then this accelerometer could be a tool this is often worn used for activity speeding up something. It measures the acceleration among the shape of analog inputs, in three dimension direction additionally as X,Y and Z. it's low noise a great deal of|and plenty} abundant less power devour device. once it's miles used for acceleration live capabilities then it's interfaced with any moderately controller like microcontroller or Arduino and lots of others.

Pin Configure of ADXL 335 Accelerometer: ADXL 335 measuring device includes five pins that square measure used for distinct functions. Its pin configuration is shown in below table and this ADXL 335 measuring device is hooked up with any controller in step with this table.

Number of Pin Configuration

Number of Pin	Configuration
1	This is VCC pin and is employed for energy on the ADLX 335 measuring device. it's attached with 3.3V dc electricity supply
2	This is ground pin and is employed for providing floor to the present ADLX 335 measuring device. it's connected with supply ground
3	This is X pin and is employed for analog enter in x axis measure. This pin offers analog input sign to controller that's measured by victimisation manner of ADLX 335 measuring device.
4	This is Y pin and is employed for analog input in y axis size. This pin affords analog input sign to controller it's measured by suggests that of the usage of ADLX 335 measuring device
5	This is Z pin and is employed for analog input in Z axis dimension. This pin offers analog input sign to controller that's measured with the helpful resource of ADLX 335 measuring device.Grammar Check Re-write Again Nex

Pulse Sensor: This MAX30100 is likewise an entire pulse oximetry Associate in Nursingd coronary pulse detector device .The MAX30100 is Associate in Nursing lined pulse oximetry and coronary coronary pulse display detector solution. It combines LEDs, a photograph detector, optimized optics, and espresso-noise analog sign method to are seeking for out pulse oximetry and coronary heart-charge indicators. The MAX30100 operates from one.8V and three.3V strength materials and may be hopped-up down through package with negligible standby modern, allowing the strength supply to live associated continuously.

Answer intended used for this traumatic requirements of wearable devices. The MAX30100 gives really little or no massive answer duration while no longer sacrificing optical or electrical normal overall performance. Nominal outside hardware components square measure needed for integration proper right into a wearable tool. The MAX30100 is genuinely configurable via package program package deal registers, and for this reason the

digital output records is confine a incredibly sixteen-deep 1st in 1st out at intervals the tool. The 1stnumber one in first out permits the MAX30100 to be linked to a microcontroller or semiconductor device on a shared bus, wherein the information isn't being observe constantly from the device's registers
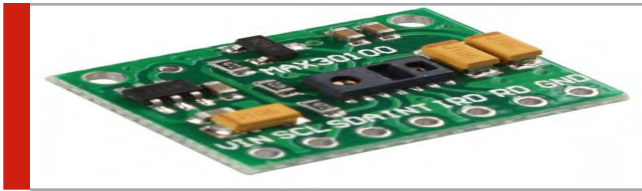
SpO2 Subsystem: This SpO2 topic at periods the MAX30100 consists of close mild-weight cancellation (ALC), sixteen-bit letter of the alphabet delta ADC, and proprietary separate time clear out. The SpO2 ADC may also be a non-forestall time oversampling letter of the alphabet delta converter with the maximum quantity as 16-bit resolution.

The ADC output records fee ar typically programmed from 50Hz to 1kHz. The MAX30100 includes a proprietary separate time filter out to reject 50Hz/60Hz interference and coffee-frequency residual close noise

Liquid Crystal Display: A liquid show (LCD) may be a flat panel show, digital visible show, or video show that uses the slight modulating homes of liquid crystals. Liquid crystals do not emit delicate directly. LCDs square measure obtainable to point out arbitrary photos (as in a very latest-cause pc show) or regular snap shots which may be displayed or hidden, in conjunction with predetermined phrases, digits, and 7-section shows as in a very digital clock. They use the identical basic era, except that arbitrary snap shots square measure crafted from an oversized reasonably tiny pixels, on the identical time as totally different displays have larger factors. associate {lcd|liquid crystal show|LCD|digital display|alphanumeric display} may be a tiny low price display. it's straightforward to interface with a micro-controller thanks to associate embedded controller (the black blob behind the board).

Internet of Things (Iot): This interweb about thing or IoT, could be this device reticular computing gadgets, mechanical and virtual machines, items, animals or men which could be give with explicit finder (UIDs) also

therefore this skill towards move info above an system with out need person-towards-preson otherwise person-towards-PC communication

Advantage

- Helps in early detection of patient's contamination.
- Accurate in scanning, clean in watching, shrewd in choice creating and dependable in communications ar conceivable

CONCLUSION

A method for the automatic detection of metastasis sports exploitation SpO2 indicators based altogether totally at the detection and classification of desaturations as a results of symptom events become evolved. A random scrubby neighbourhood classifier supported six desaturation severity and SpO2 regularity capabilities done the superior routine used for diffrentiate desaturations. associate averaged accuracy of eighty 2.Eight % became finished over distinctive unbiased check units. robust Easy regression became used to estimate the AHI from the massive form of desaturations categorized as symptom. It go back to be verified that the handiest regression differed between the datasets, to estimate the AHI, the dataset traits need to be taken under attention.

The associateticipated AHI grow to be used for SAHS severity kind associated SAHS screening with an AHI threshold of fifteen. This screening finished partner accuracy of eighty eight you make a decision on the SHHS2 dataset, outperforming all SpO2 primarily based altogether strategies from the literature tested on the SHHS2 dataset. These outcomes show that this computationally cheap approach can also also be clearly helpful extraordinarily very SAHS domestic observance system primarily based on the whole whole on pulse oximetry.

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Iot Based Fault Diagnosis and Protection of 3 Phase Ac Induction Motor

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ABSTRACT

Induction motors square measure in the main utilized in industrial applications. On-line observation of induction motors is turning into progressively vital. In newest industries there is a growing want for prime potency and availableness in motor driver systems. Moreover, motor operation observation is important for the implementation of correct and value effective motor maintenance. the most aim of this paper is to perform the fault analysis and protection of a 3 part induction motors relies on net of Things (IOT) for safe and economic electronic communication in industrial fields. The automatic method prices less, provides higher accuracy. Based on the user desires, it correlates and controls the operational parameters and monitors the motor. To make the system quick Associate in nursing user friendly it provides an android application. This conjointly includes to spotting which kind of fault will the motor possess and this results in show in crystal rectifier.

KEY WORDS: INDUCTION MOTOR, IOT WITH ARDUINO, VIBRATION SENSOR, CURRENT SENSOR.

INTRODUCTION

Although Induction machines are reliable, they're subjected to some undesirable stresses, inflicting some faults leading to failures. Safety implies the introduction of redundant part that ought to find the failure and result in the adequate answer. (Hing-YinLee et al. 1997) Thanks to the recent development within the embedded technology, it's wide employed in most industrial

applications and utility plant. One potential application is to use the PIC microcontroller for fault identification of IM (S.Ushakumari et al. 2011). Researchers have studied a spread of machine faults and have return to conclusion that machine failures embrace mechanical and insulation faults. There are numerous different kinds of insulation bugs and mechanical faults. AC induction motors are used as actuators in several industrial processes. Though IMs are reliable, they're subjected to some undesirable stresses, inflicting faults leading to failure. Observance of Associate in Nursing IM may be a quick rising technology for the finding the initial faults. It inhibits sudden failure of Associate in nursing process.

Faults Due To Various Unbalance Conditions In The Supply Of 3 Phase Induction Motor: The reason for the present unbalance ought to be distinguished and it is critical

to have the engine investigated at the application. The engine ought to be expelled from the application when the issue is identified. Current unbalance is caused because of uneven stage voltage. It can likewise be brought about by an unequal number of turns in the windings and an uneven air hole in the engine. Every last one of these causes will be appeared as follows:

Unbalanced Stage Voltages: Voltage unbalance in the electrical framework can prompt numerous issues identified with utility and client activities. From the utility side, unequal voltages might be brought about by burden unbalance. It can likewise be brought about by circuits being blown on dissemination capacitors. For the client, uneven voltage can cause genuine consequences for three stage engine loads, which results in the de-rating of engines under unequal conditions. When estimating the line to line voltage from stage R to Y, Y to B and B to R, perceptible contrasts in the voltages would be appeared. Lopsided voltage of1% will deliver unequal flows up to 5%.

Phase Reversal: The three phase induction motor direction can be reversed by changing any two of the supply lines. When the phase sequence is incorrect, the three motor and the rotating equipment runs in the opposite direction.

Overvoltage: At the point when the engine is running in an overvoltage condition, slip will lessen bit by bit and it is contrarily relative to the square of the voltage. Its proficiency will increment step by step. The power factor will lessen because of the diminishing in current being drawn by the engine .And its temperature rise will decreased because of the decline of current. At most new engines are structured near the immersion point, expanding the V/Hz proportion would deliver immersion of air hole transition causing warming. In this manner the general consequence of an overvoltage condition is to increment in present and engine warming and a diminishing in by and large engine execution.

Under Voltage: On the off chance that an acceptance engine working at full burden is exposed to an under voltage condition, full burden speed and proficiency will diminish and, the full burden current and temperature will rise. The abatement in voltage and increment in current will prompt over-burden trip. In few cases, if an under voltage condition exists it might cause to trip the engine quicker than the over-burden component. The general consequence of an under voltage condition is ascend in current, engine warming and the general engine execution will be diminished.

Short Circuit: The short out component gives security to exceptionally high overcurrent shortcomings. At the point when an engine runs, the beginning current (which is multiple times the Full Load Current) has deviated parts, for example, transfer. These deviated flows may cause one stage as much as 1.7 occasions the RMS current. Subsequently the pickup of the short out component must be fixed higher than the most extreme

hilter kilter beginning flows drawn by the stage CTs to maintain a strategic distance from commotion stumbling. The breaker or contactor, for example, hand-off is to control under such conditions must have an intruding on limit equivalent to or higher than the fixed accessible blame current.

Single Phasing: Single staging implies one of the stages is opened and the overabundance current streams in other two stages. Amid open twisting in engine, any open circuit in any of the stages between the optional twisting of the transformer and the engine, essential twisting of the breaker opens and causes behind single staging. The impact of single stage on three stage enlistment engine is changes with administration condition and engine warm limit. At the point when single-staged, the engine temperature increment is more noteworthy than the ascent in current. To keep the previously mentioned blames because of lopsided voltage, under voltage, stage inversion, earth shortcomings, over present and single staging, another model for stumbling acceptance engine utilizing Arduino IDE is the subject of this paper and quickly talked about in next segment.

Developed Interfacing of Arduino With Iot: In this part, it has find out about the various segments on the Arduino board. The Arduino UNO board is the most eminent board in the Arduino board family. What's more, the hardware and coding can be well performed by UNO board. Uncommon sheets appear to be slightly unique from the one given under, yet best Arduinos share dominant portion of these segments for all intents and purpose. Arduino is a classical stage to-utilize equipment and programming. It includes circuit board, which can be programed as a microcontroller. It is also incorporate with Advance d instant programming called Arduino IDE. It is developed to combine and transferal the PC code to the physical board.

Arduino sheets can examine both simple and advanced information signals. This signal can observe from various sensors and can be transform it into a yield. It includes such as rotating Drove on/off, interface with the cloud, enacting an engine and several diverse activities. Arduino does not require an additional bit of equipment or software engineer. For the link purpose the USB can be utilize. Fig.1 shows the block diagram of regulated power supply. The desire voltage of a device can be obtained by regulating transformer.

Figure 1: Block diagram of regulated power supply
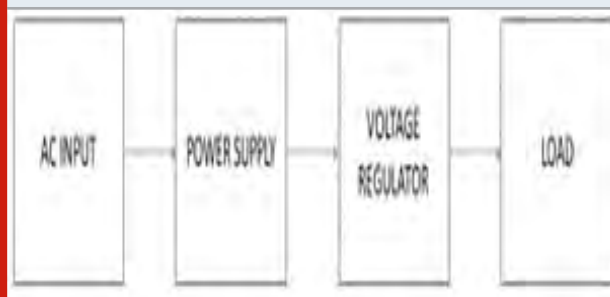
As per Indian standard 1 Ø supply is accessible at 230 volts. The throbbing sinusoidal air conditioning voltage is yield through transformer. Rectifier is used to change the throbbing sinusoidal air conditioning voltage to throbbing DC. This yield is given to a channel circuit. It lessens the air conditioner swells, and passes the DC parts. The utilization of an unregulated power supply is assured from the performance of regulated voltage.

Poor Guideline: At the point when the heap shifts, the yield does not seem steady. The yield voltage changes by an extraordinary incentive because of the gigantic change in current drawn from the supply. When the resistance is more than 30 ohms, it has the high interior opposition of the power supply.

Ac Supply Primary Variation: The plus or minus 6% of its evaluated esteem are most extreme varieties in air conditioning supply mains. Be that as it may, this esteem may go higher in certain nations (180-280 volts). At the point when the esteem is higher than DC voltage, its yield will contrast to a great extent.

Temperature Variation: The temperature varies due utilization of semiconductor gadgets in electronic gadgets. These varieties in dc yield voltage may cause mistaken or whimsical task or notwithstanding failing of numerous electronic circuits. It includes such as the recurrence move in oscillators, output twisted in transmitters and causing predisposition instability in speakers. The block diagram of interfacing for Arduino is showed in Fig.2. The voltage controller is utilized to regulate the unregulated power supply and all the above recorded issues are overwhelmed. The decreased in swell can be obtained in this manner. Consequently, the supply turns into a directed power supply. The interior hardware of a managed power supply additionally contains certain present restricting circuits which enables the supply to circuit from getting singed from incidental circuits. The power supplies utilize IC's to lessen swells, upgrade voltage guideline and for broadened control alternatives. Programmable power supplies are likewise accessible to permit remote.


Figure 2: Block diagram of interfacing for Arduino with IOT
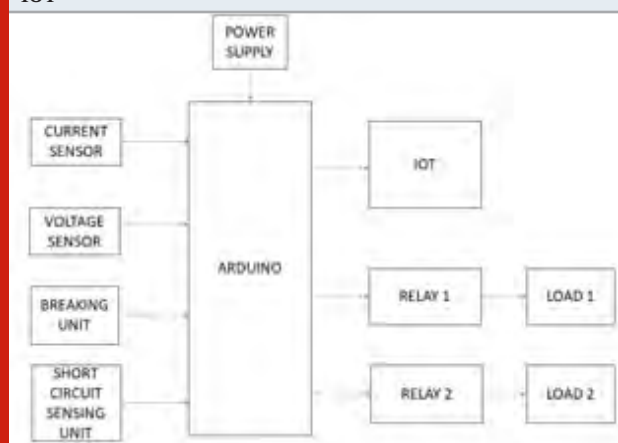
The test setup for engine parameter estimation is appeared in square outline in figure no5.The exploratory setup incorporates three stage acceptance engine, Arduino IDE , control supply, hand-off, current sensor, voltage sensor, braking unit, hamper unit, IOT. The power supply is given to the engine. In the event that any blame happens, hand-off will detect it. The present sensor is utilized to detect the stator current. Its yield can be computerized or simple. The voltage sensor is utilized to detect the overvoltage and under voltage of the engine. The braking unit is worked when any unexpected blame happens in the engine. There are different braking, for example, regenerative braking, dynamic braking and stopping. The short out detecting unit is worked when any short out happens in the engine. These blame recognizing units are associated with Arduino board where program is coded. It is interfaced with web of things where the blame message can be appeared in android frameworks. Along these lines the blame of three stage acceptance engine can be secured.

Relay: Hand-off is an electromagnetic device. It is utilized to isolate two circuits electrically and interface them pleasantly. Fig. 3 shows the PIN diagram of SPDT relay. It is a device which helpful to enable one circuit to switch another while they are totally isolated. Electronic device is working at low voltage. It is frequently used to interface an electrical circuit which works at extreme high voltage. A 230V Air conditioning mains circuit can be switched by 5V DC battery circuit. Based on above observe, a little sensor circuit can drive a fan or an electric globule. Transfers switches are open and close using electromechanically or electronically circuits. It can be controlled by controlling one electrical circuit by opening and shutting contacts in another circuit. When a hand-off contact is ordinarily open, the transfer outlines are appeared. Through electromechanically or electronically circuits the transfer switches can open and close. By opening and shutting contacts in another circuit, the transfers can control one electrical circuit. When hand-off isn't empowered, then it means that hand-off contact is open. Another reason for hand-off isn't empowered is that hand-off contact is Regularly Shut (NC). In above either case, by applying electrical flow to the contacts the transfer condition can be changed.
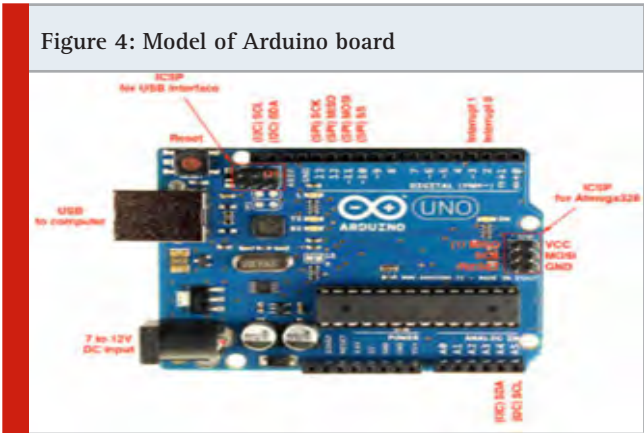

Figure 3: PIN diagram SPDT Relay
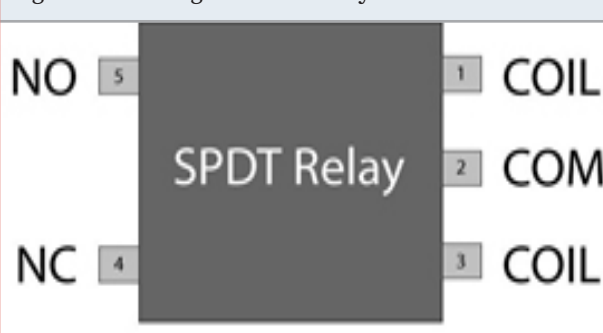
The little flow in a control circuit can be performed by transfer. It does not control the devouring gadgets, but it draws low amps from little engines and Solenoids. It can also "control" bigger voltages and amperes. It can be achieved by enhancing impact on the grounds that a little voltage connected to a transfers curl can result in a vast voltage being exchanged by contacts.

Arduino Microcontroller: Arduino microcontroller is a solitary board. Based on are intuitive articles and its environment, which is used to make the application progressively. It is highlighted equipment with open source equipment board.

Figure 4: Model of Arduino board

The equipment board is planned for 8-bit Atmel AVR microcontroller or a 32-bit Atmel ARM. The board equipment device consist of 6 simple information pins, USB interface and 14 computerized I/O sticks that enables the client to connect different augmentation sheets

Specification
ATmega328 microcontroller
5V-Supply Voltage
7-12V – suggested Info Voltage
6-20V – limits of Info Voltage
It consists of 14 Computerized I/O Pins. In that 6 pins which consist to give PWM yield.
Simple Info Pins 6
DC Current per I/O Stick 40 Ma
DC Current for 3.3V Stick 50 Ma
ATmega328
Streak Memory has 32 KB of which 0.5 KB utilized by boot loader
SRAM 2 KB
EEPROM 1 KB
Clock Speed is 16 MHz

Proteus 8: It is similar to PCB designing which is a product consist of schematic, recreation. ISIS is the product used to draw schematics and reproduce the circuits in genuine time. Constant simulation can be achieved through the reenactment permits human access amid run time. ARES is utilized for PCB designing. The fashioner can design 2D illustrations for the item. PCB as a alongside components, the element of survey can yield in 3D perspective on the structured PCB alongside components.

Step 1: Open ISIS programming and select new plan in file menu
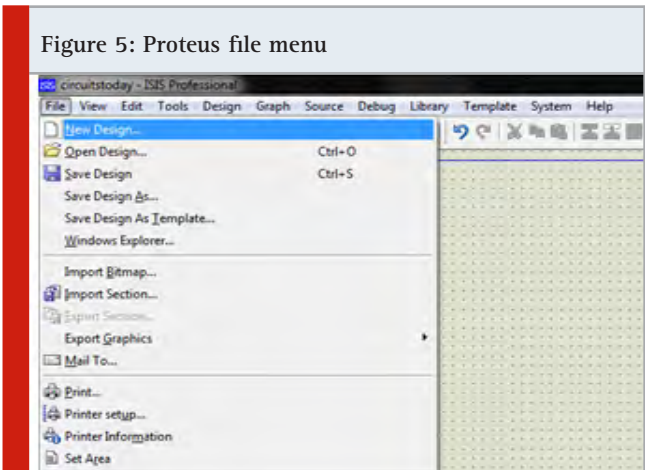
The equipment board is planned for 8-bit Atmel AVR microcontroller or a 32-bit Atmel ARM. The board equipment device consist of 6 simple information pins, USB interface and 14 computerized I/O sticks that enables the client to connect different augmentation sheets

Specification
ATmega328 microcontroller
5V-Supply Voltage
7-12V – suggested Info Voltage
6-20V – limits of Info Voltage
It consists of 14 Computerized I/O Pins. In that 6 pins which consist to give PWM yield.
Simple Info Pins 6
DC Current per I/O Stick 40 Ma
DC Current for 3.3V Stick 50 Ma
ATmega328
Streak Memory has 32 KB of which 0.5 KB utilized by boot loader
SRAM 2 KB
EEPROM 1 KB
Clock Speed is 16 MHz

Proteus 8: It is similar to PCB designing which is a product consist of schematic, recreation. ISIS is the product used to draw schematics and reproduce the circuits in genuine time. Constant simulation can be achieved through the reenactment permits human access amid run time. ARES is utilized for PCB designing. The fashioner can design 2D illustrations for the item. PCB as a alongside components, the element of survey can yield in 3D perspective on the structured PCB alongside components.

Step 1: Open ISIS programming and select new plan in file menu


Figure 5: Proteus file menu

Step 2: A discourse box seems to spare the present plan. In any case, we are making another structure record so you can click Yes or No relying upon the substance of the present document. At that point a Spring Up shows up requesting to choose the format. It is like choosing the paper estimate while printing.

Figure 6: Proteus Default Template Select
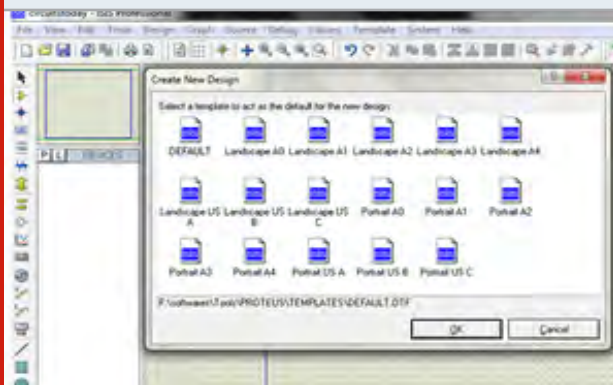
Step 3: An untitled plan sheet will be opened, spare it as per your wish, it is smarter to make another organizer for each format as it produces different records supporting your structure. However, it isn't required.

Figure 7: Proteus design sheet
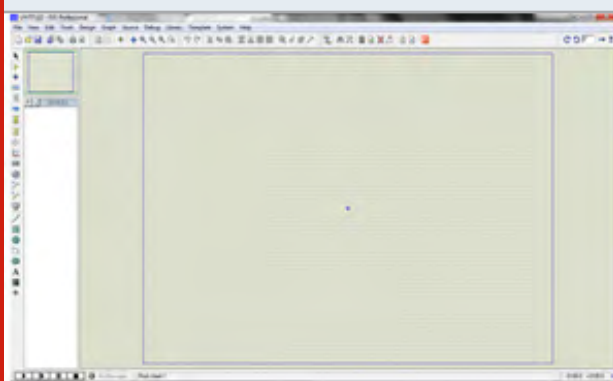
Step 4: Select the segments from classifications or type the part name in Watchwords content box In this model reproduction, the catch is discouraged amid reenactment by tapping on it to make Drove gleam.

Figure 8: Simulation run
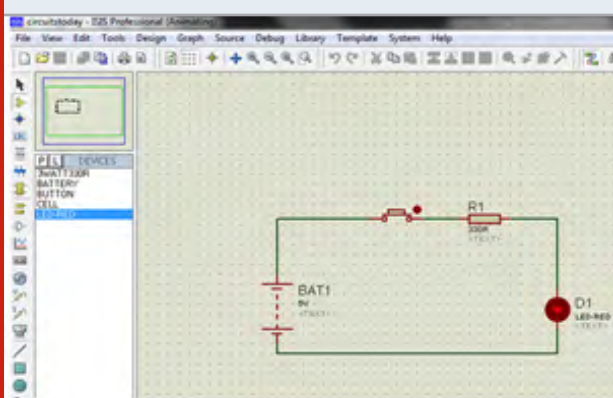
RESULT AND DISCUSSION

Hardware is made up of a three phase lamps for analyzing the fault on particular phase. Fig.9 shows the hardware design of the circuit. When the power supply is given to the circuit board, then immediately all the three lights will glow. This indicates that there is no fault occurs in the circuit. Then "No fault is detected" is displayed in the LCD. At the same time, the output will be displayed in the mobile phone using IOT. If fault occurs on the first phase then the lamp connected to the first phase will be turned off. Then "Line 1 is fault" is displayed in the LCD and also in mobile phone using IOT.

Figure 9: Hardware design of the circuit

If fault occurs on the second phase then the lamp connected to the second phase will be turned off. Then "Line 2 is fault" is displayed in the LCD. At the same time, the output will be displayed in the mobile phone using IOT. If fault occurs on the third phase then the lamp connected to the third phase will be turned off. Then "Line 3 is fault" is displayed in the LCD. At the same time, the output will be displayed in the mobile phone using IOT. Thus the three phase fault such as single phasing, over current, over voltage, under current and under voltage is easily detected using IOT.

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Comparison of with and without MPPT Charge Controller Using LDR Based Solar Photovoltaic System

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ABSTRACT

The LDR connected PV system with and without MPPT charge controller at different solar irradiance is proposed to make the best use of the PV panel power .The various hitches of MPPT have been addressed in various ways. One of the easy implementation of MPPT method is perturb and observe (P&O) algorithm .Moreover, MPPT have a drawbacks while attaining the MPP during the distinctly changing atmospheric circumstances. In order to extensively reduce the above drawbacks, a novel MPPT can be adopted with the use of LDR. This electrical MPPT aims to keep the output of a solar panel constant all of the time.

KEY WORDS: LDR (LIGHT DEPENDENT RESISTOR), P&O (PERTURB AND OBSERVE), PV (PHOTOVOLTAIC).

INTRODUCTION

Recently, renewable energies, especially photovoltaic (PV) energy, are considered as an emollient energy resource. Such PV systems do not require special maintenance and are easy to install. They considerably ensure a durable long life without causing noise or bothering effects. On the other hand, such PV systems are also adhered to the drawback of low conversion efficiency. Hence optimization technique is found to be a requisite while designing a PV system. The optimization can be achieved by extracting the maximum power output of PV systems under the unstable climatic conditions. Numerous techniques have been proposed depending on

their complexity, with sensors, convergence, setup, and in many other aspects. To increase the tracking efficiency, this modified perturb and observe method use photo sensor with MPPT controller have been proposed.

Existing System: The present system comprises of panel directly connected to DC- DC boost converter and load. The light incident on the panel is converted to electrical energy and by varying the duty ratio of DC-DC converter it is possible to achieve the maximum MPP .The P & O technique has tracking error in case of climatic change and oscillates around the MPP. The present system disadvantage will reduce the panel efficient power.

Proposed System: In this paper the electrical MPPT is used to get efficient power. Perturb and observe method has been proposed. The main disadvantage in perturb and observe method is oscillation time is maximum during perturbation. To overcome this disadvantage LDR sensor is introduce to reduce the oscillation time. The LDR sensor is used to sense the presence and absence of sunlight. If the light radiation is high the resistance value is low and vice versa. By knowing the resistance value, the voltage

value can be obtained directly without oscillation. Hence the oscillation time is reduced. That voltage value is set to the DC- DC converter by the microcontroller. This method increases the tracking efficiency.

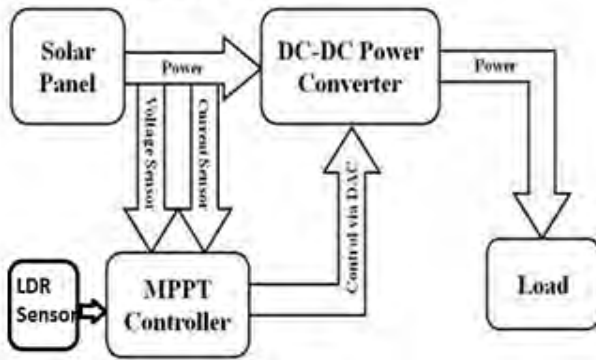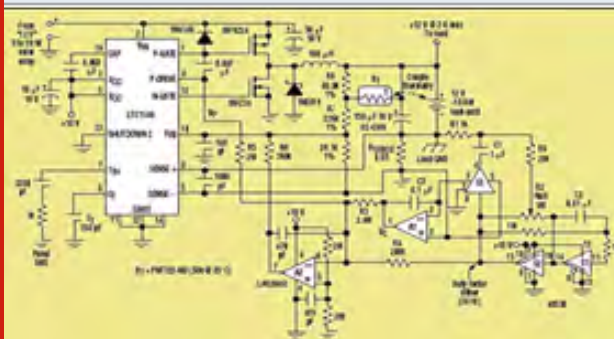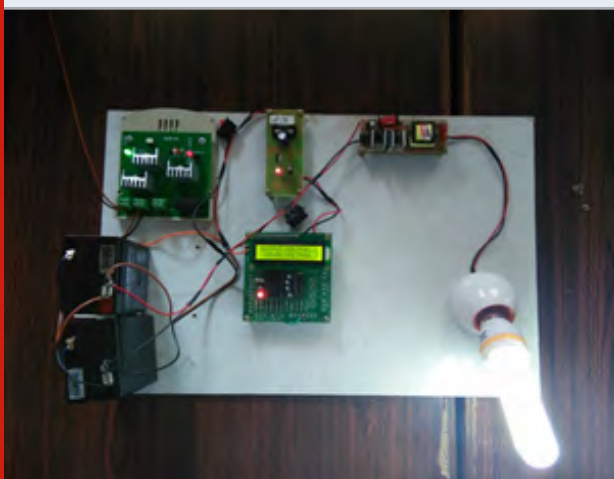Figure 1: Schematic diagram of planned scheme

Figure 2: Circuit diagram of planned scheme

Hardware Model of Proposed System

Figure 3: Hardware model of proposed system

RESULT AND DISCUSSSION

The light incident on the panel is converted into electrical energy .During partial shading condition the solar panel

fails to yield maximum power. The panel output has been taken with and without MPPT charge controller. When the panel output is taken without MPPT, The voltage value varies according to the climate condition. So the output power is insufficient to operate the load. After connecting with MPPT charge controller the panel tracks the maximum power and it is maintained constant. But the MPPT charge controller takes some time to obtain the maximum power during partial shading conditions. Due to this oscillation time happens. To overcome this, the proposed method use photo sensor. The photo sensor senses the presence and absence of sunlight and gives the photo resistance value to the MPPT controller. By knowing the resistance value the maximum MPP is tracked. The maximum power is tracked with the known voltage value since it reduces the oscillation time.

Without Mppt Output: The table 1 shows that PV panel output without MPPT charge controller, the panel output varies depends on the irradiation. So the load does not operate properly without the charge controller.

Table 1. PV panel output without MPPT

S.NO	TIME	VOLTAGE IN VOLTS
1	09.AM	7.10
2	10 AM	7.48
3	11 AM	8.10
4	12 AM	10.8
5	01 PM	10.81
6	02 PM	10.78
7	03 PM	8.75
8	04 PM	8.50
9	05 PM	7.09

WITH MPPT: (Partial Shading)

Table 2. PV panel output with MPPT (Partial shading)

S.NO	TIME	VOLTAGE IN VOLTS
1	09.AM	10.08
2	10 AM	10.30
3	11 AM	10.35
4	12.00.00 AM (without shadow)	10.80
5	12.01.30 PM (on partial shadow)	08.80
6	12.01.45 AM (on partial shadow)	08.85
7	01 PM	10.82
8	02 PM	10.82
9	03 PM	10.75
10	04 PM	10.42
11	05 PM	10.10

Table 2 shows the PV panel output with MPPT charge controller. The panel output is maintained constant with

and without partial shading conditions. But the MPPT charge controller takes some time to obtain the maximum power during partial shading conditions. Due to this oscillation time is high.

MPPT with LDR: (Partial shading) Table 3 shows the PV panel output with MPPT charge controller and LDR sensor is proposed. The panel output is maintains constant with and without partial shading conditions and it reduce the oscillation time.

Table 3. PV panel output with MPPT and LDR (Partial shading)

S.NO	TIME IN HOURS	VOLTAGE IN VOLTS
1	09.AM	10.08
2	10 AM	10.30
3	11 AM	10.35
4	12.00.00 AM (without shadow)	10.80
5	12.01.30 PM (on partial shadow)	08.80
6	12.01.45 AM (on partial shadow)	10.55
7	01 PM	10.82
8	02 PM	10.82
9	03 PM	10.75
10	04 PM	10.42
11	05 PM	10.10

CONCLUSION

The solar panel develop electrical energy from sun irradiance .During partial shading condition the solar panel fails to yield maximum power. The panel maximum power is attained with MPPT charge controller. But the MPPT charge controller takes some time to obtain the maximum power during partial shading conditions. To overcome this disadvantage the LDR sensor is used in this proposed method. The LDR sensor reduces the oscillation time by determining the variable resistance. By knowing the resistance value, the voltage value can be obtained directly without oscillation. Hence the oscillation time is reduced. The proposed technique achieves good tracking efficiency, relatively high convergence speed and the oscillation time is reduced by using LDR sensors.

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Solar Based Self-Directed Flexible Agricultural Robot Using IOT

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ABSTRACT

Various process can be done in agricultural field like cutting,seeding,spraying etc. These process are mainly performed to reduce the human work and time. This project aims to designed agricultural robot for doing all these operations with the help of solar power. In this process, the energy from solar panel is used by the robot and it's operated using IOT module to send signal to the robot to do various operations. By doing this mechanism we can increase the efficiency of send souring, grass cutting, pesticide spraying and also we can reduce problems from manual plating.

KEY WORDS: DATA FLIP FLOP, FINITE IMPULSE RESPONSE FILTER, FOLDED FILTER, MULTIPLEXER, NON FOLDED FILTER.

INTRODUCTION

Agricultural is one of the most important occupation in the world.It is mainly depends on climatic changes and also new technologies for the improvement in agricultural system are developing now a days to reduce mam power and time our project model is mainly designed for doing various operations in the field of agricultural using robot assistance.

BLOCK DIAGRAM

EXISTING SYSTEM: This system is benefit for the farmers for seed sowing. Operation of this machine is quite simple when compared to others machines. Actually this increases total yield percentage of the farmers effectively. The energy consumption for robot is less compared to the motor based tractor. Workers problem can be reduced.

PROPOSED SYSTEM: The robot is mainly designed to perform various operations like seed sowing, grass cutting, pesticides spraying in simultaneous process. In this model upper layer is fixed with a solar panel which gets energy from sunlight then it is converted into electricity. The established energy is delivered to the charging circuit. Some of the methods like feeding, cutting are complicated in agriculture field. The tools (or) machine used for above operations are very costly & also difficult to handle. For these operations, the developing system will reduce the human work and time.

PROPOSED SYSTEM REQUIREMENTS

Arduino UNO: It is a microcontroller based open source equpiment and programming Arduino sheets in which the inputs given by the user and transform that inputs into a yield and it will turn on a LED and guide the

micro controller board. The Arduino software is used for processing.

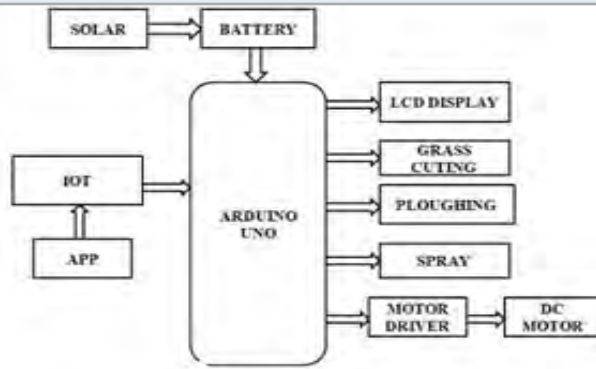**Figure 1: Block diagram of proposed system**

Figure 2: Arduino Board

Solar Panel: Solar panel which gets power from the sun that can be used for source. It is made up of photo voltaic material.The board (or) panel which receives sunlight source that can be used for multipurpose robot.

Figure 3: Solar Panel

Battery: The battery-powered reinforcement battery gives capacity to finger terminals when the essential wellspring of intensity is inaccessible. With the correct reinforcement battery, your frame work won't need to be interfered during a force disappointment. The reinforcement battery keeps gate crashers from incapacitating the entrance control by killing capacity

to the structure, and keeps bolting the entryways made sure about by the framework.

Figure 4: Battery

Node MCU: Node MCU is could be compared to Ethernet building block. It consolidates the best part of WiFi passage and station microcontroller. The best part makes the Node MCU marvelously useful asset for WiFi organizing. To transfer information, the passageway is associated with web server.

Figure 5: Node MCU

LCD Display: Liquid-crystal display is a display which can be used to display the programs in digital formate. It is mainly made up of liquid crystals.

Figure 6: LCD Display

Motor Driver: IC which is used in this process is L293D.In total it consist of 16 pins that can be split into 8 pins on both the sides. The 4 pins are in grounded position and another 4 pins used to send information to the driver next 4 pins are yield pins which is to perform any operations like grass cutting,pluging etc.

DC Motor: The DC motor are direct current motor which is mainly used to control electrical energy into mechanical energy .Just as customary revolving DC engines, direct engines are additionally accessible which are equipped

for creating a constant liner development. A DC engine has a stationary part stator and rotatory part rotor. The outcome is that there are fundamentally three kinds of DC Motor such as Brushed motor, Brushless motor, Servo motor, Gear motor.

Figure: 7 IC –L293D

Figure 8: DC Motor

RESULTS

In agricultural field various operation like grass cutting, pesticides spraying can be done by a single machine called agricultural robot. This robot is mainly designed to reduce human work and also it will reduce time. This method is more efficient and can be easily controllable.

Figure 9: The proposed agricultural robot

CONCLUSION

The challenging farming tasks similar to seed sowing, grass cutting and pesticide spraying are achieved by the designed multipurpose agricultural robot. The sowing method of robot achieve sowing of two different sized seeds. The advantage of designed robot reduce the work of labour and effective utilization of resources .The IOT modules is used in this robot for passing information to the systematic robot which ensure the safety of human without direct contact .The main source of robot is solar energy which is renewable source. The arduino application is used for advanced seed sowing, grass cutting and pesticide sprayer which has significant impact in agriculture.

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