AUTOMATION POWER LOOM SYSTEM

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Abstract:

Automation is the process to decrease the man power and the concept of an automation is to provide a simulation test in a microcontroller based system to be embedded in weaving machine for Monitoring and controlling the design operation. Power loom automation replace conventional mechanical methods as a forward step in embedded systems for industrial automation and mechatronics applications. The proposed embedded system aimed to read the design parameters entered by the designer using calculate the productions of loom, generate the design in sequences of binary digits and apply the design on the machine with machine status consideration. Peripheral Interface Controller (PIC) microcontroller, pin needle, Liquid Crystal Display (LCD), relays, sensors and switches are used for system programming in C language and Proteus electronics simulation environment.

Keywords:

Embedded Systems, Microcontroller, Simulation, industrial automation,fabric structure , Switches ,Relays etc.

1. INTRODUCTION

1.1 THE INSTITUTION OF PRODUCTION ENGINEERS:

The layers of warp yarn, and each pick of weft beaten up into the cloth after each successive passage of the shuttle across the loom. Is cloth still to be woven this way during the next hundred years and after, or will some other method supersede The history of weaving shows that man's inventive genius has been working continuously on the problem of producing a woven textile, and there are definite cycles during which certain ideas are reawakened and brought to the front and hailed as something entirely new.There are not enough weavers in the industry, and

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the in- take of new recruits is insufficient. Wages in the textile industry have altered a great deal since the war and this has increased the wages of the weaving operative. Manufacturers are obtaining a very much' better price for the cloth which they produce, and, although we are supposed to be approaching a buyer's market, these prices will probably hold for some time. The chief results of these three reasons for increased interest are that it becomes essential for one operative to attend to more machines in order to maintain volume of output it is essential on account of higher wages that each operative should produce more fabric, and lastly, because cloth is selling at a better price, the manufacturer is in a better position to pay more for new machinery.

1.2 Application:

The pre-requisites to the application of automatic looms are weaveable raw material and counts or fibres not so excessively coarse as to nullify the labour-saving devices. The automatic loom has a wide application for standard fabrics in every-day use, but it involves the introduction of a system as well as a machine; it requires suitable conditions of operation for the weaver in the weave room and examples of this are illustrated .

2. LITERATURE SURVEY

Kunal Joarder and Daniel Raviv(1) were proposed that the The concept of visual looming can be used as a powerful visual cue for autonomous obstacle avoidance.

Kunal Joarder and Daniel Raviv(2) were proposed the concept of avoiding collision and to calculate the thread hence the Visual looming is related to an increased projected size of an object on a viewer's retina as the relative distance between the viewer and the object decreases.

Mark. Hassel (3)were proposed that the concept of the thread detection including the feature detection system

.Jurgen Freudenberger, Martin Bossert, Victor V. Zyablov, and Sergo Shavgulidze (4)were proposed that the variations of the woven codes of outer warp can be done by means of an convolution codes and block code

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s.Ren C. Luo, Jyh Hwa Tzou and Yi Cheng Chang(5) were proposed that the process is appealing because it could be difficult to create models of complex objects using CAD software without the aid of a 3D digit.

Michael Bailey-Van Kuren(6) were proposed that the concept of an detecting and destroying the thread connections that can be occur in the processing of electronic waste.

. Hitoshi Kametani , Junya Shiratsuki(7) were proposed that the measuring quantity of thread that can be obtained in a sewing machine.

Fabio Previdi, Sergio M. Savaresi and Corrado Volpi(8) were proposed that the process of an weft yarn filling insertion process in an rapier looms were determined by means of an mathematical model.

M.H.shenassa and K.Khakpur(9)were proposed that the production of an loom were continuously monitoring and send the production of loom to the owner using an wireless technology by means of an Bluetooth and Wi-Fi technology.

Guang-Li Liu, Lu Yang(10) were proposed that the to minimize the bound of leave-one-out error directly, a convex optimization problem can be derived which constructs a sparse linear classifier using kernel.

3. EXISTING SYSTEM
3.1AUTOMATED POWER LOOM USING IC555:

op-amp in the same areas, the 555IC is also equally reliable and is cheap in cost. Apart from its applications as a monostable multivibrator and astable multivibrator, a 555 timer can also be used in dc-dc converters, digital logic probes, waveform generators, analog frequency meters and tachometers,
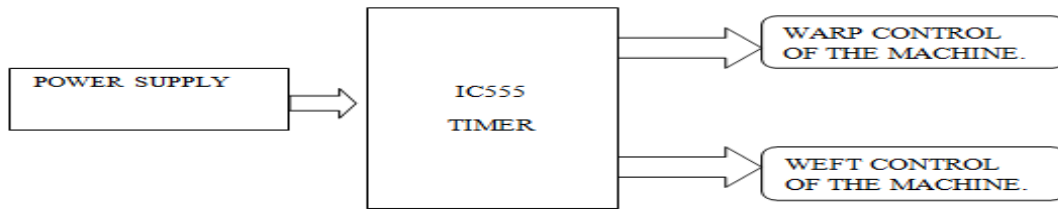
4.PROPOSED SYSTEM

4.1 EXECUTION OF PHASE I:

In this paper new method is been proposed by means of an Automated power loom using IC555.Because from the existing process the new process has been developed. The new process is to overcome the drawbacks of an automated power loom using IC555.The drawback is that the IC555 have a minimum number of pins so can't able to control the maximum process.

In order to overcome this drawback, In new method ,instead of using IC555,the PIC16F877A microcontroller had to be used. because it contains the maximum number of pins up to 40 pins. In the new method, there are three process are included in it, the three process are,1.To Check whether the thread is available in the coil or not.2.To Stop the machine when the thread was cut in the machine.3.To display the production of loom.Because of the above three process ,there will not cause loss for the production of the loom.

1.Checking the thread is available in the coil or not are not detect by using an photo transistor sensor.

2.Cutting of the thread are also detect by using an phototransistor sensor.

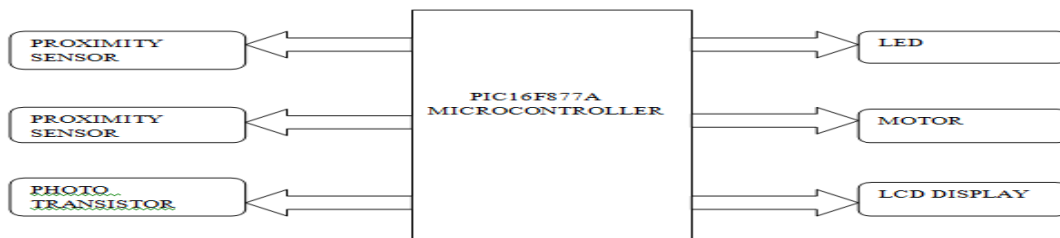3.Displaying the production of loom are obtained in an LCD display.

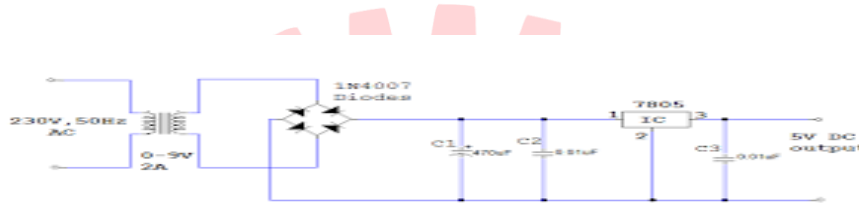## FIG 4.1 USING PIC16F877A

4.2 POWER SUPPLY CIRCUIT:

FIGURE 4.2POWER SUPPLY CIRCUIT

FIG 4.2 denotes a power supply circuit.Here both the 5v and 12v supply will be used.By means of LM7805,the 5v supply can be generated.By means of LM7812,the 12v supply can be generated.Both the voltages are to be act as an input.The 15v transformer has been used. hence to convert the 15v to 12v ,the rectifier had been used.From the power supply ,the input is given to the PIC 16F877A IC.For glow the LED, less than 5v has to be obtained in it.To run the motor, the 12v has to be obtained.

4.3 PROXIMITY SENSOR:

A proximity sensor can detect metal targets approaching the sensor, without physical contact with the target. Proximity sensors are roughly classified into the following three types according to the operating principle: the high-frequency oscillation type using electromagnetic induction, the magnetic type using a magnet, and the capacitance type using the change of capacitance. proximity sensors are of the high-frequency oscillation type.

I4.4. PHOTOTRANSISTOR:

A photodiode is a semiconductor device that converts light into current. The current is generated when photons are absorbed in the photodiode. A small amount of current is also produced when no light is present. Photodiodes may contain optical filters, built-in lenses, and may have large or small surface areas. Photodiodes usually have a slower response time as their

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surface area increases. The common, traditional solar cell used to generate electric solar power is a large area photodiode.

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4.5 LED:

A light-emitting diode (LED) is a two-lead semiconductor light source. It is a p–n junction remain somewhat more expensive, and require more precise current and heat management, than compact fluorescent lamp sources of comparable output.In the proposed system,there are three types of an led lights were used namely ,RED, GREEN and YELLOW.

.4.6 MOTOR:

A motor is an electrical machine which converts electrical energy into mechanical energy. The principle of working of a DC motor is that "whenever a current carrying conductor is placed in a magnetic field, it experiences a mechanical force". The direction of this force is given by Fleming's left hand rule and it's magnitude is given by $F = BIL$. Where, B = magnetic flux density, I = current and L = length of the conductor within the magnetic field.

4.7 LCD DISPLAY:

A **liquid crystal display** is a special thin flat panel that can let light go through it, or can block the light. (Unlike an LED it does not produce its own light). The panel is made up of several blocks, and each block can be in any shape. Each block is filled with liquid crystals that can be made clear or solid, by changing the electric current to that block. Liquid crystal displays are often abbreviated **LCDs**.It can

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RESULT AND FUTURE WORK:

Using the MPLAB software, the program has been created and then the creating program will allow run in an PROTEUS 7 Professional. Hence the output obtained as when the motor get stop, the red light will glow and when the motor is indicate that it will going to be stop, the yellow light will glow and when the motor is indicate the running condition by means of when the green light will glow. if the motor want to rotate only once means the separate switch will be allocated for that method.

5.CONCLUSION AND FUTURE WORK:

The Machine gets stop when the thread is get cutted and the thread is not available in the coil.This can be indicate by means of an LED light.It will display the production of loom continuosly using proximity sensor.The future work will send message of loom production through GSM to the manager..

6.REFERENCES

1.Kunal Joarder and Daniel Ravid Robotics Center and Department of Electrical Engineering Florida Atlantic University, Boca Ram, Florida 33431; and 2Robot Systems Division, National Institute of Standards and Technology(NIST)" A New Method to Calculate Looming for Autonomous Obstacle Avoidance" 1063-6919/94 $3.00 0 1994 IEEE.

2.Kunal Joarder and Daniel,R aviv1$ The Electrical Engineering Department and The Robotics Center Florida Atlantic University, Boa Raton, FX 33431, and 2National Institute of Standards and Technology"A Novel Method to Calculate Looming Cue for Threat of Collision" 0-8186-7190-4/95 $4.00 0 1995 IEEE.

3.Mark. Hassel ,Aria1 Laser Electronics, England "Laser Based Feature Detection System Including Internal Thread Detection" 0-7803-2646-6-IEEE2006.

4.Jürgen Freudenberger, Martin Bossert, Victor V. Zyablov, and Sergo Shavgulidze "Woven Codes with Outer Warp:

Variations, Design, and Distance Properties" IEEE journal on selected areas in communication, VOL. 19, NO. 5, MAY 2001.

5.Ren C. Luo, Jyh Hwa Tzou and Yi Cheng Chang Intelligent Automation Laboratory Department of Electrical Engineering, National Chung Cheng University 160 Shang-Shing, Ming-Hsiung, Chia-Yi, Taiwan 621, R.O. "The Integration of 3D Digitizing and LCD Panel Display Based Rapid Prototyping System for Manufacturing Automation" 0-7803-6456-2/00/$10.00 ©2000 IEEE.

6.Michael Bailey-Van Kuren Department of Manufacturing Engineering, Miami University "Automated Demanufacturing Studies in Detecting and Destroying Threaded Connections for Processing Electronic Waste" 0-7803-7214-X/02/$10.00 0 2002 IEEE.

7.Hitoshi Kametani' , Junya Shiratsuki' 'Deparhnent of Control Engineering Matsue National College of Technology, Matsue, Japan "Noncontact Measurement of the Quantity of Remained Thread of a Sewing Machine Used in the Factory" SICE Annual Conference in Fukui, August 4-6.2003.

8..Fabio Previdi, Sergio M. Savaresi, Member, IEEE, and Corrado Volpi "A Numerical Model of the Weft Yarn Filling Insertion Process in Rapier Looms" Proceedings of the 2006 American Control Conference Minneapolis, Minnesota, USA, June 14-16, 2006.

9..M. H. Shenassa K.N.Toosi University oftechnology Department ofControl Engineering "Loom Data Monitoring Using Wireless Technology" 0-7803-9521-2/06/$20.00 §2006 IEEE.

10.**.** GUANG-LI LIU, LU YANG ,College of Information and Electrical Engineering, China Agricultural University, Beijing 100083, China "Uncertainity Loom For Early-Warning" Proceedings of the Fifth International Conference on Machine Learning and Cybernetics, Dalian, 13-16 August 2006.