

Loom Automation and Monitoring System

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Abstract- A power loom is a mechanized loom powered by a line shaft and alcohol, and was one of the key developments in the industrialization of weaving during the early Industrial Revolution. The main components of the loom are the warp beam, heddles, harnesses, shuttle, reed, and take up roll. In the loom, yarn processing includes shedding, picking, battening and taking-up operations. In POWER LOOM, weft filling process is done on stretched warp fabric. The shuttle of yarn is continuously moved for weaving; the yarn is weaved in loop on both ends. There are two major problems in power loom that are empty bobbin detection and weft cut detection, because of that the quality and cost of material decreases.

For empty bobbin detection, the sensor detects the bobbin is near to empty, then it gives indication through LED and moves towards the one end of the loom and replaces the bobbin. For weft cut detection, when the weft is cut then it gives indication through LED and the loom will stop.

Index Terms- Automation in power loom, Empty bobbin detection, Weft cut detection.

I. INTRODUCTION

Industry is the key to the rapid economic development because industrialization involves radical transformation of society in all its aspects economic, social, political and cultural. It is true that rapid industrialization is the only effective way of helping the Indian economy to come out of the vicious circle of poverty. To lay sound foundation for rapid industrialization, there is a need for huge investments in key and basic and large scale industries. But concentrating merely on large scale industries is bound to create misery for millions in the form of unemployment, shortage of consumer goods, and concentration of wealth in few hands. As a result the basic problems like unemployment, shortage of foreign exchange and paucity of capital will be accentuated. Under the circumstance, small

industries are undoubtedly better suited, since they are labour intensive and capital saving.

II. LITERATURE SURVEY

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

Kunal Joarder and Daniel Raviv 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 was proposed that the concept of the thread detection including the feature detection system. Jurgen Freudenberg, Martin Bossert, Victor V. Zyablov, and Sergo Shavgulidze were proposed that the variations of the woven codes of outer warp can be done by means of convolution codes and block code.

III. BLOCK DIAGRAM

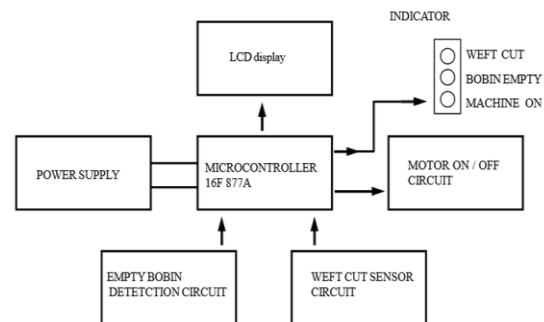


Fig.: Block Diagram

Automation is the process of decrease in man power. In power loom automation we use microcontroller 16f877A, power supply, LCD display, motor empty bobbin detector circuit and weft cut sensor circuit. In

automation , when the power supply is on,then motor gets ON and shuttle is moved.

In this we can first can start the loom then the position of shuttle is detected then motion of Shuttle is done in left and right direction.

In loom continuously in the moving . In that we are detecting two problem i.e. empty bobbin and weft cut by using IR sensor and limit switch (metal detector in industry)

When the bobbin is near to empty then it gives indication through IR sensor that the thread is going to finish after some time. Before bobbin will fully empty then shuttle moves toward, left or right position and replace bobbin ,so that the quality and cost of material is saved.

At weft cut, by using LED it gives indication that the weft is cut. When the shuttle is moved in loom and suddenly weft is cut then LED will turn ON and the shuttle ON and the shuttle moves toward the left position and then motor will be off completely.

In this we can first can start the loom then the position of shuttle is detected then motion of Shuttle is done in left and right direction.

IV. RESULT

When the shuttle is moving the bobbin is moved until the sensor can detect the thread is not empty and When the white thread is not sense then the machine will be stop. And the shuttle is stop at left side. When the thread is sense by a sensor the the LED will be glow. In the weft cut detection When the limit switch is press then the power loom will be start to rotate. When it release then the LED can indicate the loom will be stop. Loom rotate repeat and stop when left is occurs.



V. CONCLUSION

In our project there are two main objectives can be observe first one is empty bobbin detection and weft cut sense. When the shuttle is moving and suppose the bobbin is empty then it can be indicated on LCD display. When the thread is cut or empty bobbin detection then it can be detected by limit switch and IR sensor. The motor can stop on left side in our project.

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