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AUTOMATED BROKE FEEDING FRAME WORK IN PAPER MACHINE USING PLC

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ABSTRACT

A well esteemed concern in the field of paper productions, per day almost 10% of papers are rejected considering quality standard so the reasons and the sea recalled as Broke. This rejection takes place at each and every level of production Unit. The final rejection is finishing house where all the broke are collected together and fed in to pulperasa process of recycling it. Our ultimate aim is to automate and control the above process by designing a system using Programmable Logic Controllers. To reduce the man power system we have proposed the system into Automated by using the Programmable logic Controllers. These recycled papers are been put into the mixing chest by man power our ultimate aim is to automate and control the system by using programmable logic controllers. The Broke feeding are collected together and combinely feed into Pulper as a process of recycling. The final rejection is done in finishing house where all the Brokes are collected together and combinely fed into Pulper as a process of recycling.

Keywords: ***Brokes, Recycling, Pulper, Agitiator, PLC.***

1. INTRODUCTION

It is well operated and that has grown from the initial capacity of each tones per to the present level of determining level of tones per annum. Under the mill expansion plan, and has been installed a new state of the art at a capital outlay function. The machine has capacity of functioning5.45Mdeckle, operating at1100 meter per minute speed an discapable of producing high quality pigmented and surface sized papers. It has the advantage of low specific energy consumption. The part of backward integration of chemical bagasse pulping line completed simultaneously as of the mill expansion plan will increase chemical bag assepulp production from 400 tons per day to 500.

A multi fuel high pressure boiler has been installed with steam generation capacity of 125 tph to take care of the additional steam requirement. As apart o f corporate social responsibility initiatives, for which the police have led to consistent growth from the initial capacity.

The continuous growth has made to emerge significant player in the Indian paper industry with the credit of being the largest producer of writing paper inthecountry.Alargeportionoftheequipmentinstalledarefirstofitsin the industry.

1.1 Product Maintained:

It offers high-quality surface sized and non-surface sized paper to suit the needs of modern high speed printing machines. The cutting edge technology backed by experienced professionals ensures quality products to customers. Manufacturing process are equipped with state-of-the-art control systems to maintain at each stage of critical quality.

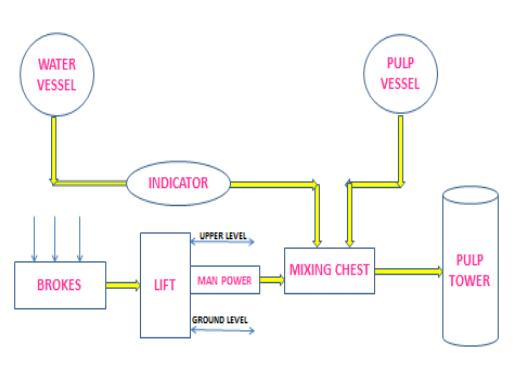
The paper produced by eco- friendly as the pulp is manufactured out of renewable raw material and is subjected to Elemental Chlorine Free (ECF) bleaching. As the paper is acid free, it has a longer color stability and enhanced permanency in terms of strength characteristics. The paper reels have uniform profile with strength properties to cope even with high speed machines. It manufactures in Printing and Writing Papers in substances ranging from 50 GSM function state condition to 110 GSM. Under the mill expansion plan, and has been installed a new state of the art at a capital outlay function.

2. EXISTING SYSTEM

He put the broke in to the pulper, open tap for the prescribed water level & start the mixer. He would do this whole process manually. So we need atleast 3 workers for this continuous process. It is the existing system at each level of sequence functioning at state of recycling the brokes.

2.1 BLOCKDIAGRAMOF ANEXISTING SYSTEM

The block diagram for the Existing system is plotted in the following ways



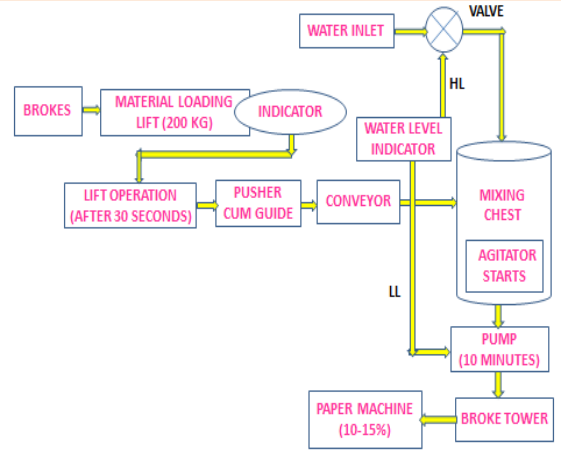
3. PROPOSED SYSTEM

They produced range 1500 MT paper per day. And 10% of this production will be considered as waste like, incorrect GSM (paper size), paper cutting & etc. Now the worker collects the whole brokes, broke is functioned well esteemed source. So we need at least 3 workers for this continuous process. It is the existing system for recycling the brokes. Our Ultimate is to automate the above process by using the process of PLC techniques.

PLC stands for Programmable Logic Controller. We used the Crouzet logic software to control the whole process.

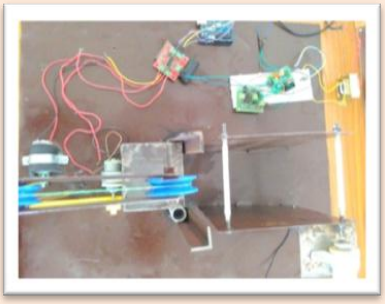
4. BLOCK DIAGRAMOFANPROPOSEDSYSTEM

The block diagram for the Proposed system has been plotted in the following ways



4. PROTOTYPE

In our prototype we are using aurdino UNO board and driver circuit for purpose of controlling the motor. The transformer has been used for step down the voltage from 220volt to 12volt. There are two driver circuits. Hybrid driver circuit can be used upto 30 volt. In our prototype we require 12 volt. Similarly the driver circuit used upto 12 volt. The implementation diagram for our prototype is plotted.



IN CONTINUATION WITH THIS IMPLEMENTATION WE HAD DEVELOPED THE PROCESS OF RUNNING IN BOTH THE FORWARD AND THE BACKWARD DIRECTIONS BY USING THE AURDINO PROGRAM

4.1 PROGRAM

The Programming used for the prototype model are as follows

```
//AUTOMATIC BROKEFIEEDING IN PAPER MACHINE
constint in_1=2; // MOTOR 1
constint in_2=3;
constint in_3=4; // MOTOR 2
constint in_4=5;
constint in_5=8; // MOTOR 3
constint in_6=9;
void setup()
{
        pinMode (2,OUTPUT);
        pinMode (3,OUTPUT);
        pinMode (4,OUTPUT);
        pinMode (5,OUTPUT);
        pinMode (8,OUTPUT);
        pinMode (9,OUTPUT);
}
void loop()
{
          // LIFT MOTOR UP
        digitalWrite(2,HIGH);
        digitalWrite(3,LOW);
        delay(69505);
          // LIFT MOTOR STOP
        digitalWrite(3,HIGH);
        digitalWrite(2,HIGH);
          // PUSHER FORWARDdigitalWrite(5,LOW);
        digitalWrite(4,HIGH);
        delay(26500);
          // PUSHER BACKWARD
        digitalWrite(5,HIGH);
        digitalWrite(4,LOW);
        delay(24000);
          // PUSHER STOP
        digitalWrite(5,HIGH);
        digitalWrite(4,HIGH);
        // COVEYOR START
        digitalWrite(8,HIGH);
        digitalWrite(9,LOW);
         // LIFT BACKWARD
        digitalWrite(3,HIGH);
 digitalWrite(2,LOW);
        delay(69505);
         //LIFT MOTOR STOP
        digitalWrite(3,LOW);
        digitalWrite(2,LOW);
  }
```

5. ADVANTAGES

- Expected consistency of output pulp is maintained
- High precision in Broke loading
- A perfect time cycle oriented process can be achieved

6. COMPARISON BETWEEN EXISTING AND PROPOSED SYSTEM

S.NO	CONDITION	EXISTING	PROPOSED
1	LIFT TIME	1MINUTE	20 SECONDS
2	MAN POWER	6 WORKER	2 WORKER
3	ACCIDENT PERCENTAGE	10%	1%
4	WORKING HOURS	12 HOUR	24 HOUR
5	RECYCLE BROKES	5 TONS	10 TONS
6	WASTAGES	20%	5%
7	LIFE TIME	10 YEARS	20 YEARS

7. CONCLUSION

The manual broke feeding system to recycle the waste, called brokes. Using this project we will automate the whole process. Using PLC it is very easy to handle the defects& future up with gradation. Also reduce the manpower due to the automation in the broke feeding system. Once we install this system in the broke feeding system, it reduces2men'sworkload.Soitisvery useful to the industry for their recycling system. So finally we conclude that the "Automated Broke Feeding Framework in Paper Machine Using Plc System" is very much useful to the recycling of brokes.

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