A Review on Bearing Sorting System

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Abstract-*The Scope of This Project to Initial Step Implimation of PLC Base Auto Weighing Control System for Automation Industry.The Progressive Invention in Auto Weighing System is important task specially because of rising demand of product and declining labor availability in industry.In recent year in industry check job and foulty job are Rejected manually.But now a days weight of job check using automation(Load cells) technique and foulty job are rejected using PLC and accurate job sort.In industry production speed high because of product demand is more. But check weight of job manually it will take more time for the weight of job and so overall production rate is slow. Hence the purpose of this project to develop Automation technique using PLC for sorting job.*

Key Words: Double Acting Pneumatic Cyllinder, Load cell(Weighing Panel), PLC,Conveyor Belt.

1. INTRODUCTION

The main purpose of this project to increase the accuracy and speed of checking the weight of job in industry and accept or reject the job as per our requirement using PLC.There are many weighing maching in market. But this type of weighing machine not suitable of industrial application. Because every industry required auto weighing machine means the controlling machine should have automatic control of weight in order to accept or reject of job as per standard weight. Introduction With the increasing level of automation and automatic control technology application in the production of quantitative packing more in food,fertilizer,feed and light industy widely used.

Weighing the development of packing technology has gone through manual weighing, relay control, weighing instrument control,PLC control stages. Compare traditional weighing instrument control application of PLC the touch screen control system composed to easy switch set and reset and improve machine speed and accuracy.That's why we design PLC Based Auto Weight control System for accecpting or rejecting the bearing which having accurate weight.

2. PROBLEM DEFINITION

Bearing is an individual part of any machine & the automobiles. The quality of the bearings improves the performance of the vehicle & the engine & also the machine efficiency also in electrical motors & generator, blower & all household appliances the bearings are used in a large scale. In order to fulfill such a huge requirement the companies are engaged to manufacture the bearings.During the manufacture the faulty bearings are possible to pass & being sent to the end user. If detorates the performance of the machine & also Performance of the company. Hence it is important & mandatory to inspect the bearings during manufacturing. The manual inspection may cause many errors, so the electronic quality inspection is preferred. There are so many methods of proper quality selection like-

1) Size based selection
2) Aesthetic selection
3) Weight based selection

But, the size based selection is not so accurate & have many limitations. The aesthetic method is expensive hence, we preferred the weight based method.
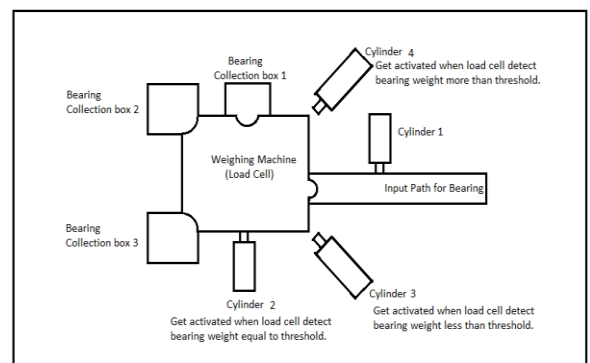
3. BEARING SORTING SYSTEM

Fig: Block diagram of Bearing Sorting Machine

Fig.1 Shows block diagram of Bearing Sorting machine, following are the main element of this machine:

1. **Pneumatic cylinder**:
 Pneumatic cylinder is used to reject or accept the object depending on the signal send by the PLC.. Load is applied Pneumatically operated piston and cylinder.

2. **Proximity Sensor:**
 Proximity Sensor is used to detecting the object which is moving through Conveyor belt on load cell(Weighing panel) and send the Signal to PLC.

3. **Load cell/Weighing panel:**
 Load cell is used to measure the weight of object which is moving on Conveyor belt

4. **PLC(Programmable Logic Control):**
 PLC is important for this project.The load cell controller is connected to input module and output module of PLC is connected to Pneumatic cylinder and indicator.The fixed range of weight is put into PLC and it will check the coming job is within the range or not.if job is not in range of weight then it will rejected by pneumatic cylinder and accurate job can be sort.

5.Conveyor Belt:
 Conveyor belt are durable and reliable can be used for Automation ,distribution and Warehousing.

3.1 Working of Bearing Sorting System

In the system arrangement there are total four no pneumatic cylinders are used all of these are double acting. The position of cylinders are shown in fig1:block dia. 1st cylinder is for allow the entry of bearing to be weight. & remaining cylinders are separation of bearings. All cylinders are having the 5/2 solenoid valve to activate the cylinder in proper order.When 1st cylinder allowing the entry of bearing then bearing is going on a weighing pad which is mounted on load cell. If the weight of bearing is equal to threshold value that time cylinder 2nd is activated & push the bearing in the collection box 1st. If weight is less than the threshold value that time cylinder 3rd is activated & push the bearing in collection box 2. If the weight is more than the threshold value that time cylinder 4th is activated & push the bearing in collection box 3. In that way we can do the segregation of bearings on weight based technology.

4.   ADVANTAGES,   DISADVANTAGES   AND APPLICATION

4.1 Advantages

- Accuracy and Speed is more.
- Easy to operate.
- Skill operator is not required.
- Good quality and low failure rate with long life.
- Operate in hazardous environment.
- High precision,High Efficiency.

4.2 Application

- In small and large scale industries to sorting the Bearing or any product based on weight basis.
- To measure the accurate weight of job or product in industrial application to accept accurate and reject inaccurate job Automatically.Also it can be used in packaging industries for packing different food of accurate weight and reject extra weight of food.

5. CONCLUSION

In industry the production rate should high because of demand of product is more. But we check the weight of bearing manually then it will take more time for checking the weight and overall time for production should be decreses. So by using auto weighing control system we totally overcome for this problem. PLC will handled all operation regarding the weight of bearing.operate pneumatic cylinder according to weight of bearing. The pneumatic cylinder can remove faulty bearing and passed the accurate bearing successfully.

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