



## **The technology of automatic sorting in the industries in coming future**

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### **Abstract**

There are plenty of scientific innovations and sophisticated technologies that has simplified human life and raised the standard of living. Generally, manufacturing industries keep manufacturing same models with little variation in height, color, weight, shape. And here sorting plays an important role to improve the efficiency of manufacturing processes. This gives a provision to reduce the manual effort and hence human error by replacing the conventional methods of sorting in areas involving hectic sorting. The sorting technology is used in various industries now days, thus increasing their production and reducing error in packing and other areas in the industries.

**Keywords:** scientific innovations, sophisticated technologies, human life, manufacturing industries

### **Introduction**

Automating every sector of industry is an important step towards increasing efficiency, lowering cost and avoiding human related errors. Automated machines can perform a repetitive motion consistently without involving prospects of injuries or accidents thereby avoiding higher costs. Along with offering faster rates of throughput, savings are made with the wage cutting and immediate returns in efficiency leading to a faster ROI in this investment. Sorting is one such process which is witnessing transition of human unskilled labor to automated machinery in the manufacturing industries owing to the many advantages. These sorting systems are a bridge between the production and packaging machinery system used mainly in the manufacturing and logistics industries in which products are distinguished and separated on the basis of some parameter like size, height and color. The aim of this project is to develop an Automatic Sorting Conveyor Belt machine which can process automatically the objects travelling on the conveyor belt and further sort them being distinguished on the basis of height. A precise value of the height parameter is set which is used as a condition to either allow the objects to pass through to next step on the conveyor or be discarded in a different space so as to be collected or feed it to a different destination.

In today's quick paced world where there are speed running industries and tremendously higher rates of production, industries can't bear human errors for sorting these products that too associated with high labor costs and time taking procedures. This gives rise to the necessity to replace conventional manual sorting with cut-cost and quick alternatives. The purpose of this project is to save the time for inspection along with reducing the errors of human workers thereby designing an Automatic Conveyor Belt machine using advance technologies like PLC which is a computerized control method of controlling and managing the sorting mechanism and at the same time maintaining the efficiency of the industry and quality of the products. The criteria on which sorting is to be done varies according to

the application and area of industry where it finds its implementation. Also, the scale can vary and accordingly the number of components and equipment can be increased along with extending the logical program of the programmable logic controller for large scale production.

It is well understood that manufacturing industries play vital role in the development of a country's economy. This is why the countries that have higher manufacturing rate are known to be developed whereas those with little manufacturing are considered underdeveloped. Hence, the development of manufacturing industries is of utmost importance and since it depends upon the innovations in the manufacturing process, it is a significant sector that calls for most effective technology to be implemented. In old days, it was possible to utilize manual labor for sorting similar objects. But in today's world of technology where there are speed running industries, the production rate has increased tremendously. In such cases industries can't bear human errors for sorting these products that too associated with high labor costs and time taking procedures. This gives rise to the necessity to reduce manual effort and also human error by replacing the conventional methods of sorting in areas involving hectic sorting with cut-cost user friendly automated systems.

Application of Automation in an industry gives rise to great opportunities regarding its implementation and innovation learning. There are various advantages of Automatic sorting in the industries as:

- 1. Improved Quality and Reliability** - Automation is precise and repeatable. It ensures the product is manufactured with the same specifications and process every time. Repairs are few and far between.
- 2. Better Floor Space Utilization** - By decreasing a footprint of a work area by automating parts of your production line, you can utilize the floor space for other operations and make the process flow more efficient.
- 3. Reduce Production Cost** - A quick return on investment (ROI) outweighs the initial setup costs. All of the following automation advantages reduce production cost.

4. **Reduce Waste** - Robots are so accurate that the amount of raw material used can be reduced, decreasing costs on waste.
5. **Improved working environment**- With the use of automation, it is possible to improve the working conditions and safety within your production process or plant. Automation can reduce health and safety risks, eliminate manual handling and reduce the risk of repetitive strain injury
6. **No labour crisis**- Finding labour for industries, for performing repetitive tasks is becoming more and more difficult, and is likely to become more difficult in the coming years after.

Automating every sector of industry is an important step toward increasing efficiency and reducing human related errors, here we try to automate the sorting process by using PLC. The automatic sorting system has been reported to be complex and a global problem. This is because of the inability of sorting machines to incorporate flexibility in their design concept. This research therefore designed and developed an automated sorting object of a conveyor belt.

In many industries job pieces of various sizes are moved on same conveyor belt, these need to separate at various locations in the manufacturing line. For this purpose, we are using the automated process which is used to sort the materials.

In the end, I want to conclude that the automatic sorting in the future will be much appreciated technology and will benefit the industries a lot in terms of increase in production, cutting of labour cost, making sorting more economical and hassle free for the industries.

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