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Automatic Prefeeder of Corrugated Paper Printing Machine

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ABSTRACT

In industry there are many machines which working on Automatic prefeeder but the cost of these machines are very high. So automatic prefeeder is used in many industries to transport goods and materials between stages of a process at low cost. Conveyors are a powerful material handling tool. They offer the opportunity to boost productivity, reduce product handling and damage and minimize labor content in a manufacturing or distribution facility. Conveyors are generally classified as either Unit Load Conveyors that are designed to handle specific uniform units such as cartons or pallets, and Process Convey-ors that are designed to handle loose product such as sand, gravel, coffee, cookies, etc.

I. INTRODUCTION

Conveyor is used in many industries to transport goods and materials between stages of a process. Conveyors are a powerful material handling tool. They offer the opportunity to boost productivity, reduce product handling and damage and minimize labour content in a manufacturing or distribution facility. Conveyors are generally classified as either Unit Load Conveyors that are designed to handle specific uniform units such as cartons or pallets, and Process Convey-ors that are designed to handle loose product such as sand, gravel, coffee, cookies, etc. which are fed to machinery for further operations or mixing. It is quite common for manufacturing plants to combine both Process and Unit Load conveyors in its operations. Gravity Roller conveyor is not subjected to complex state of loading still we found that it is designed with higher factor of safety. There is definitely an economic need not only to control the conveyor speed and the number of parallel machines, but also to find the optimum solution in reach-ing the maximum profit of a deterministic production quantity. Through this study, the control of the conveyor speed in optimizing the production of the

machines and conveyors be-comes concretely solvable Corrugated Kraft Paper Board Box. technically called Corrugated Fibre Board Box is the most popular shipping container, now-a-days. The box is manufactured from corrugated board which consists of 3 or more layers of Kraft paper. The middle fluted layer is pasted with two flat parallel sheets of paper. The boxes find their number of applications in the packaging of chemicals & drugs, tobacco, engineering goods, canned & bottled goods, food products, lamps, electrical appliances, glassware's etc. Packaging plays very important role in the country's economy. Till recently only the western world, more particularly the developed countries cared about proper packaging. However, now even developing countries like India have changed their outlook towards packaging and in the last few years increasing stress has been laid on improved and proper packaging. In fact, today, packaging is as important as the contents.

Corrugated boards were first produced in India in early fifties. Since then the production of corrugated boards has increased steadily. Corrugated boxes have replaced wooden boxes & crates in many applications. Today, about 80% of all shipments in the world are being made in fibre board boxes. In India, about 60% of the packaging is being done with corrugated fibre board boxes.

II. METHODS AND MATERIALS

The Automatic Paper prefeeder Machine works under the methodology of the mechatronics system with the objective to provide automation. Generally the automation deals with the elimination of manual work using electronic processing of mechanical work control mechanism. It consists of three main units which include:

- A. Input unit
- B. Processing unit
- C. Output unit

Input Unit:

The input unit of the automatic paper Prefeeder machine comprises of the components required to receive the Paper from the manpower to the driving roller. Processing unit: The processing unit comprises of the components required to ensure the transfer of paper one by one by various sensors to other rollers. It further, signals the output unit to deliver the number of paper to the customer. Output unit: The output unit comprises of the components required to deliver the paper to the customer. It works on the instruction from the processing unit. 1. shaft > mild steel



Figure 1.2

2. bearing> stainless steel



Figure 1.3

3.belt>leather

WORKING:

working process categorised in 4 steps

- 1. Putting bunch of paper on table
- 2. Take up rollers takes paper one by one
- 3. Driving rollers drives another feeding rollers
- 4. Printing rollers print the corrugated papers.

5. Behind the printing machine all printed rollers gathered



Figure 1.1. Working process



Figure 1.4

MATERIALS:

Different component and their materials are as follows

4. DC MOTAR









5. Roller> hardened steel/high speed steel



Figure 1.7

III. LITERATURE STUDY:

The literature review is divided in three parts as mentioned below

- 1. World Class Manufacturing
- 2. Offset printing process
- 3. Heat augmentation technique for rollers
- 1.5.1 World Class Manufacturing
- 1. Reduce Operational Costs.
- 2. Satisfy Customer's Expectations.
- 3. Increase Visibility to Business Performance.
- 4. Manage Global Operations.
- 5. Streamline Outsourcing Processes.

6. Reduce Lead Time.

7. Reduce Time To Market.

The relevant parameters of the present research problem are discussed in more details.

Reduce Operational Cost

Although recent developments in planning and customer relationship management have focused more on top-line benefits (increased revenue), the bottom line is still greatly dependent on controlling costs. Companies with a lower operational cost structure enjoy an obvious advantage in profitability and the ability to adjust pricing to meet competitive pressures if necessary to maintain or gain market share. Costs are really just part of the scoreboard. This approach contrasts with a pure cost reduction focus without associated business process change, which can negatively impact other operational measurements.

Satisfy Customer's Requirements

The ultimate key to success in any business enterprise is to please your customers. The most successful companies don't just meet customer expectations, they exceed them and beat the competition by setting the bar at a level that makes it difficult if not impossible for others to surpass.

Successful manufacturers manage the entire customer relationship—from prospect to post-sales service and support—this involves the entire organization in a customer focus. Whether or not they have direct contact the customer, contributors must keep the customer's need in mind as they plan and carry out day to- day operations. It is important to truly understand the customer's goals and objectives. Your products and services must strive to support the customer's vision. wit

Increase Visibility to Business Performance

Today's fast-moving, ever-changing manufacturing environment demands faster responsiveness to changes in the market, product innovation and supply chain events. In this environment, ignorance is one of the greatest threats to a manufacturing company's health and success. Executives and senior managers must understand how the enterprise is meeting strategic objectives. Middle-level managers need visibility into how they are performing against tactical objectives. Responsible individuals must be notified immediately when supply chain issues threaten the completion of objectives, so actions can be taken to ensure customer delivery and quality requirements continue to be met.

A well-implemented and effective enterprise information system delivers overall visibility into the health of the company and its operations and provides detailed information for performance measurement, process management, and problem identification and remediation. Such a system can help to improve revenue through competitive advantage, can help you understand your business and therefore, manage it better, reduce operational costs, improve performance and improve results for all stakeholders-owners, executives, managers and employees.

Managing Global Operations:

There is no question the world is shrinking, and virtually every business is now involved in some form of international trade—whether marketing and selling to customers in other countries or simply using parts or materials that are produced elsewhere. The "glass is half full" crowd will view these developments as the onset of unlimited opportunity. If you tend towards the half-empty-glass crowd, you are likely to see significant threats in virtually unlimited competition from literally any place on earth. The Internet is a key tool for joining the global business community and conducting business around the globe. Globalization and e-commerce have changed traditional business.

IV. RESULT AND DISSCUSION

From these project we have discussion on that the paper thickness of corrugated paper for printing purpose is only in the range 9mm to 15mm.these project is suitable only for medium scale industry not for large scale industry because capacity of automatic prefeeder is low as compared to conventional conveyor system.

V. CONCLUSION

The Automatic Prefeeder system is suitable for mass production. By using the automatic prefeeder the efficiency of printing machine is increases and accuracy of machine also increases.

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