Automatic T-Shirt Folding Machine

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Abstract –

 The purpose of this research is to prepare machine that Automatic T-shirt Folding Machine to make a fold of every shirt which is put on machine. The presented paper will provide a brief idea in designing new machine with some of these materials.

1. INTRODUCTION

 Automation is the use of machineries, control systems and information technologies to increases productivity in the production of goods and delivery of services. The main incentive for applying automation is to increase productivity, and quality beyond that possible with current human labor levels to realize economies of scale, and realize predictable quality levels. In the scope of industrialization, automation is a step ahead of mechanization. Whereas mechanization needs human operators with machine to assist them, automation decreases the need for human sensory and mental requirements while optimizing load capacity, speed, and repeatability. Automation plays important role in the world economy and in daily experience.

2. LITERATURE REVIEW

N. Gomeshal et. al Photovoltaic powered t-shirt folding machine offers an exllent solution to these work by providing a automated machine which folds a t-shirt approx. in 2 seconds. Finally, the machine has been more efficient than the manual folding.

Suraj Shah et. al takes one leap against automation by folding the t-shirts by sorting mechanism. Folding has been automated by the usage of Arduino UNO which can be easily replaceable and easily available in shops.

Xudong li et. al works on the safety of humans during the folding of fabrics, they include photo sensors and infrared sensor to monitor the human invasion, they also found solution on power supply.

Mukesh P. Mahajan et. al works on using mechanical gear motors same as the photovoltaic t-shirt folding machine. To overcome traditional chores, it can be used in household also. This will result on the past complex designs and rare failures.

Yiwei Liu et. al deals with the process and design, the main motto is to reduce human interference by easy folding of clothes. It must have two set of patterns and also completes in just 20 seconds.

S. Divya1 I. K. Santhosh David2, M. A. Prince Ray Raj T-shirt folding is a process used to pack the fabrics and keep them neat. The textile industry hasn't witnessed the growth in the field of automisation in the manufacturing sector of the clothing industry. In addition, automatic folding mechanism has been used in this machine. Automation has been achieved by designing with the help of sensors and other actuators. This will make a automated technology in textile industry which it has been absence for years.

At present the system will be created based on materials and components available to bring simple and low cost in the system. The entire system can be easily implemented to the current system without any high changes in the industries.

3. PROBLEM DEFINATION

The textile industries in INDIA currently doesn't use the automation in garments. It is very necessary to bring automation according to the literature survey only few of textile manufacturers uses any kind of automation in INDIA.

For folding n number of T-shirts in textile industry through manual folding is a tedious process. As it takes approx. 15 – 20 seconds for a single T-shirt, so the time consumption for the folding also very high.

The manual process causes error in folding and sorting mechanism and the ability to fold cloths in same size.

It costs approx. Rs. 30 to fold 100 t-shirts manually, so that the manual folding is not time efficient as well as cost compatible.

4. METHOLOGY

For folding one T-shirt manually human takes approx. 20 secs, but T-shirt folding machine hardly takes approx. 3 – 5 seconds for folding a single T-shirt. If we take comparison between manual folding and automatic folding machine, for 1hour manual (3600 seconds) folding by human only folds 180 T-shirt, whereas automatic T-shirt machine can fold 850 T-shirts in same 3600 seconds. Efficiency of T-shirt folding machine is so greater when compared to manual folding.

Automatic T-Shirt Folding Machine (ATFM) is cost compatible than other folding mechanisms when a worker in large scale industry folds approx. 1500 cloths per day at a salary cost approx. Rs. 500, The ATFM reduces the time to fold cloths and it folds approx. 7000 cloths per day costs approx. Rs. 500.
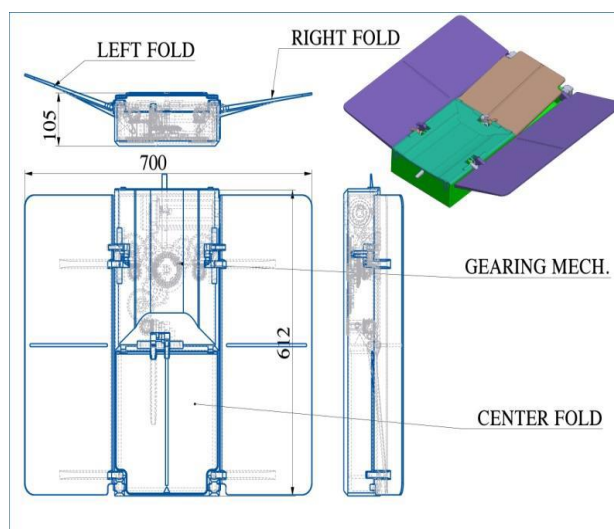

Figure 1 : Experimental Diagram

In Case Some Protype Has To Be Fabricated Then Its Tentative Design & Procedure For Making.
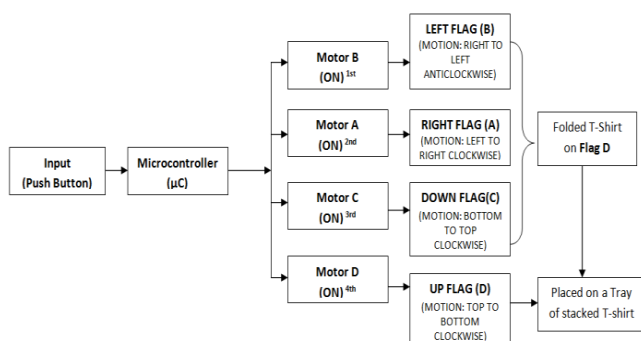

Figure 2: work flow chart

Process of this easy t-shirt folding machine will start once the push button is pressed. When the push button is pressed, motor B or flag will rotate anticlock wise. Once it reached the time set in the program, it will stop. Then motor B or flag will back to the original position by rotating clockwise. The sequence of the motor will be same for motor A, C and motor D. This process is simplified in Figure.

The folding motion of this machine is monitoring by the motor which is attached with the folding material listed as Motor A, B, C and D as in figure. Motor B is the first motor to rotate where it will make the B flag of the to rotate to the left. Then follows by motor A will lift up and make flag A to rotate from left to right. Then followed by motor C from bottom to top to completes up the folding mechanism and finally motor D will move from top to bottom to slide the folded t-shirt on a conveyer tray that will stacked the folded t-shirt. This motion continues until the shirts are finish.
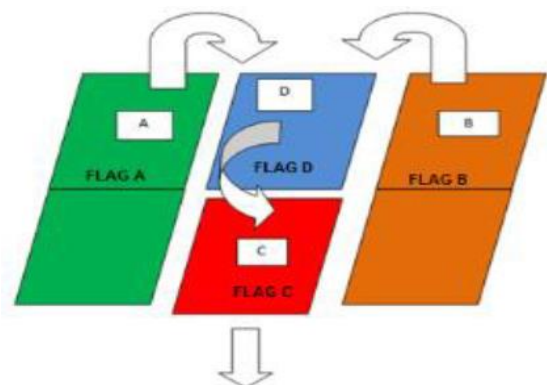

Figure 3: Working system

5. CONCLUSION

This project is very helpful for small scale textiles or garments, where shirts are folded by manual method, our machine helps these types of garments to reduces their work time, also increases work speed & these machine needs only one person to handle it. Our machine also improves the quality of every folded t-shirt it also helpful for garments progress.
Using this machine every small-scale textiles and garments profit increased minorly & it is helpful.

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