

Automated Lug Crimping Machine

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Abstract - Crimping word is the most popular worldwide among all the devices to crimp the wire with its suitable lugs. The Great importance of the crimping machine is to increase their performance and productivity. The performance of pneumatic crimping machine depends upon behaviour of the operation. The main aim of the project is to design a pneumatic crimping machine in working condition with suitable environment. The characteristics of the force analysed thoroughly the proper design of crimping machine. We decided to design crimping machine which is cost effective and advantage has following such as reduce error, fast & safe crimping operation.

Keywords- Crimping contact, lugs, pneumatic crimping, jaws, and metallic rod.

I. INTRODUCTION

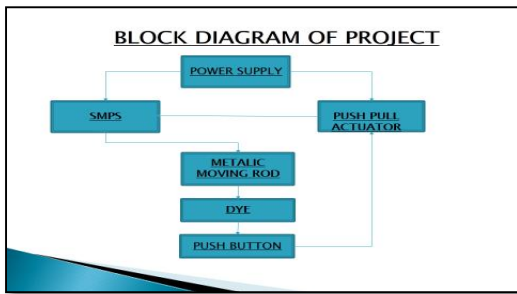


Figure 1: Block Diagram

As the Compressor Compress the air stroke, therefore, Mechanical shaft rotates and go further that’s why linkages will to and fro from its position. At that time, because of the linkages, the mouth of jaw will open and crimp the wire attached with it with its suitable lug efficiently.

A. Types of lugs –



Figure 2: Different types of lugs

Lugs are very applicable for industry. It is used in many applications. Wire which is crimp with its lug by the

crimping machine. A crimped wire with its suitable lugs is often used in mechanical/electrical components.

B. Flexible wire for lugs -

Wires should be flexible for crimping with its suitable lugs. It crimp with its lugs and applicable for various uses.



Figure 3: Types of Wires

Push pull Actuator- Push pull actuator is the Heart of this machine. By the help of Push pull actuator it pushes the piston in the forward direction to press the dye and then dye will crimp the lug.

II. DATA ANALYSIS

Time study after implementation: The time study shows below are the approximate time requires for manufacturing of one crimping device according to new designed setup. This time study was calculated after discussion to the company employs. Experimental Graphs shows the time consume comparison between Hand crimping tool & Pneumatic crimping device. Here, Pneumatic crimping machine is less time consuming which is help to increase the productivity. With less time consuming operation, it is also précised that it help to increase the satisfactory & efficient work output. After analysis, we also find the cost comparison between hand crimping tool and pneumatic crimping machine. With the graphical results, it is clear that pneumatic crimping machine is more efficient machine. Labor cost is reduced and it work as more effectively with satisfactory output. Time accessory graph, chart, cost comparison graph is shown below in fig.4.

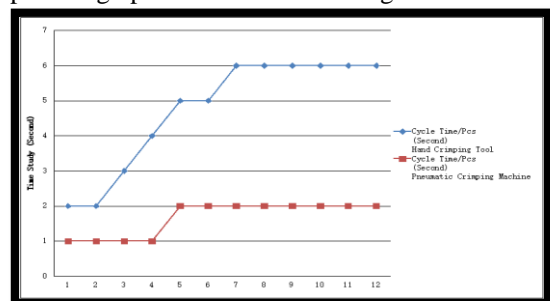


Figure 4: Time study analysis

III. PRODUCTION DIFFERENCE BETWEEN HAND CRIMPER & PNEUMATIC CRIMPER

Cost comparison between hand crimping tool and machine – There is major difference of costing in between hand crimping tool and lug crimping machine.

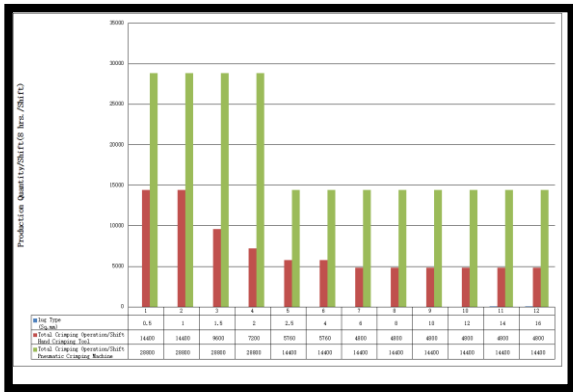


Figure 5: Statistics of Production Rate

Table I- Cost Analysis

Process Description	Hand Crimper	Crimping Machine
Capital investment	0.067	0.034
Operator cost	10	5

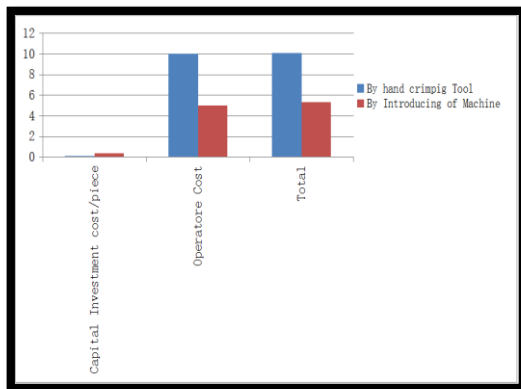


Figure 6: Costing difference between Hand Crimper & Pneumatic Crimper

Advantages and disadvantages –

1. Advantages

- They are simpler to configure and construct.
- Low initial & maintenance cost (compared to hand crimper)
- One time installation.
- Human efforts will be lower to greater extent.
- Wastage of lugs will be reduced as no locking of gears present.
- Cost is less as compared to hand crimper.
- Any size lug can be easily crimped.
- Due to automation not much pressure will required by human.

- Proximity sensors will first sense whether there is lug under punch or not and then & then only press the lug.

2. Disadvantages

- It will require electricity continuously.
- In absence of electricity the machine will not work.

IV. CONCLUSION

The project presented has involved the development and implementation of crimping the wire with Pneumatic System. With the help of Pneumatic crimping machine, we conclude that it eliminates the hand crimping tool & it is also less time consuming. Pneumatic crimping machine gives the output very effectively and increase the productivity of any industry. By using this crimping machine company will get more benefit in design, cost and efficacy. It reduces human efforts as compared to manual crimping and also it saves the time. As per the experimental data, the involvement of capital cost and operator cost, the cost of hand crimping tool is 10.067 paisa/piece whereas the cost of pneumatic crimping machine is 5.34 paisa/piece. So we can conclude that this machine is also helps in overall cost reduction and increase the productivity with less time consuming.

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