iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** III **Month of publication:** March 2020

DOI:

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue III Mar 2020- Available at www.ijraset.com

Methodology to be Developing to Synchronising Pully for Cutting Exact Size of Wire

Amol Dharmendra Kale[1], Govinda Sanjay Dalimkar[2], Harshal Chandrashekhar Gaurkar[3], Swapnil Kishor Ghate[4], Bhushan Vijay Mate[5], Kirtikumar Chandrabhan Kuthe[6], Dr. C. C. Handa[7]
[1, 2, 3, 4, 5, 6, 7]*Student, Head Of Department, Mechanical, K. D. K. College of Engineering, Nagpur, India*

Abstract: ***The main reason of developing this project for automatic wire winding machine which might be used for various winding operations that may greatly reduce a shot behind the operated by hand machines and to implement the concept of automation in wire winding machines. This method are adapted for decreasing the manufacturing cost and also to extend the speed of productivity. This machine are often wont to wind coils of wires regarding any limited gauge. Firstly, the manual methods of winding were in practice and this method proved to be very tedious and therefore the time required for winding was more. Hence, it had been necessary to create some revolutionary changes within the field of winding. The components produced by this method have good strength to weight ratio and is additionally cost effective. Manual wire winding had to be a traditional way earlier but it lacked in accuracy because the wire wont to be either loose or tight; hence it had been need for a machine to be manufactured for greater accuracy at alittle scale level. This winding machine is straightforward to use and it's also portable.***

I. INTRODUCTION

In this under developing small scale industries, nowadays worker could be a major problem for the industries. many an time's situations happen that worker strike for his or her personal benefits which ends in performance degradation and loss in efficiency. because the results of that company owners should bear great loss and hence because of that company owner cannot achieve their desired profit and goals .The system of automation in industry can solve this problem in a very very effective way. The automation system solves worker problems which saves cost, increases accuracy and reduces human errors. After surveying various electrical and electronics industries we conclude that, nowadays the industries have introduced automation in their systems to some extent except for some basic processes which are time consuming like wire cutting, packaging etc.

A manual wire winding machine usually features a core on a spindle and also the user feeds wire, rope, or other material onto the core. The worker control spindle speed and also the feed of the fabric through his hand, guiding it to manage the stress and cargo pattern. A wire winding machine could be a machine for winding wire within the spool, bobbin and plenty of more. This wire winding machine is one in all sorts of winding machine that available in industries today. The wire winders will be classified in keeping with their speed levels and capacity. From multiple speed machines to medium speed machine medium, large and extra-large machines, these machines are available in various types and categories, performing a variety function.

II. PROBLEM STATEMENT

To improve the productivity in the various industry using automation and resolve the issues related to workers. This project is design to increase the productivity with the help of machine and decrease the work and tension of the labour. The labour face the problem related to operate the machine it become complicate for the worker due to multiple work at a instant of time, so this project or machine make the worker work easily and due to this understand of machine work for worker become simple

The various problem face before making this machine was given as follows

A. The challenge is to operate both pulleys in synchronisation due to that the process is time increase
B. Cutting of wire in exact length is not proper
C. Production speed is very slow
D. Cutting of wire is not well defined
E. Time consume.

III. LITERATUREREVIEW

A. Machine Design to realize Manufacturing System Objectives

This paper investigates why machines are presently designed to cut back unit labor cost by increasing the speed of the machine or eliminating direct labor altogether with automation. Machine design practices are currently shown to be operationally Energy consumption is chargeable for a considerable a part of the environmental impact consumption is few priority for several machine designers, since they concentrate

B. CAD Software is Employed for Developing the Machine Design

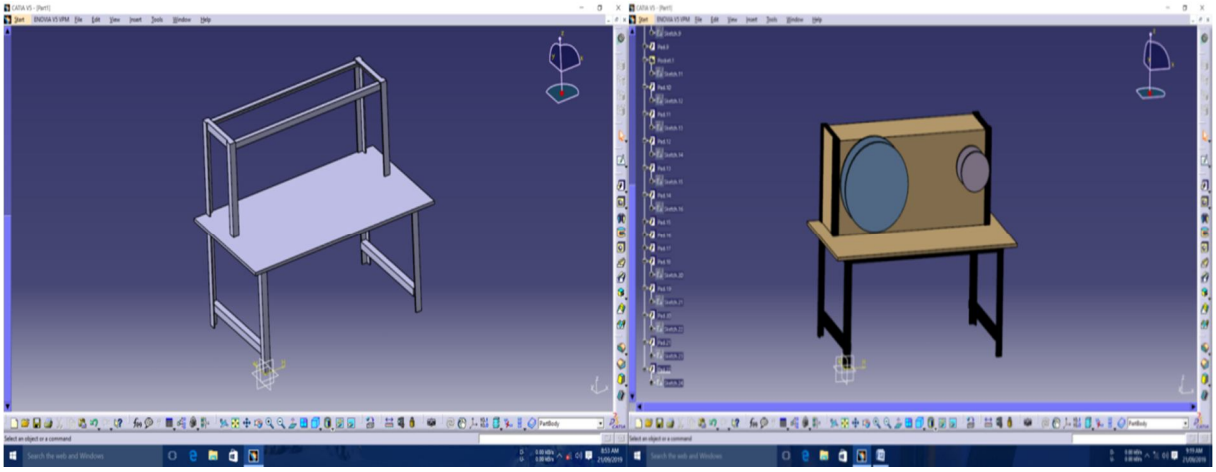
The paper provides an outline of the state of art in computational electromagnetic. There are major three areas like Design, optimization and material selection for the electrical machines. The CAD software like creo, catia, autocad , etc used for developing the planning of the machine and its components.

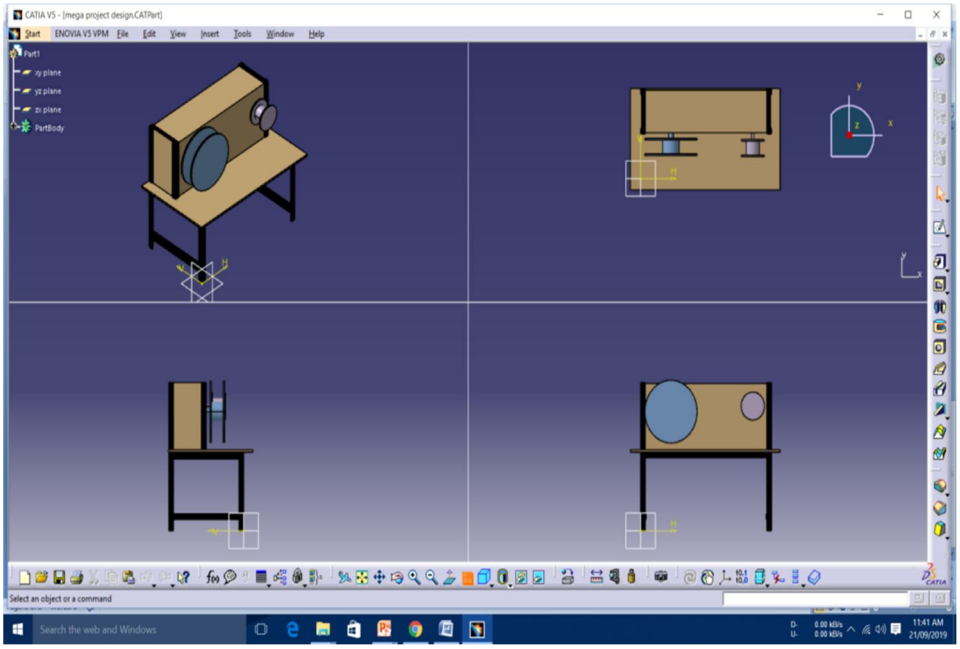
C. State Machine Design Pattern

This paper presents a replacement object oriented design pattern by State Machine design pattern. This pattern extends capabilities of State design pattern. These pattern allow an object to change its behavior when its internal physical change.

IV. ARCHITECTURE

A. Catia Model





ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue III Mar 2020- Available at www.ijraset.com

V. WORKING

In the wire winding machine, there are basically use of one AC motor which help to rotate the spool, there are basically two spool from that one of small diameter and another is of large diameter. The large diameter spool is mounted on the shaft which situated at the end side of the machine and the small spool are mounted on the shaft at front end

The AC motor has a higher speed and due to the higher speed the operation of wire winding is not well operated, due to the condition the speed of the AC motor will reduced. For reduction of the speed of the AC motor the pulley and shaft mechanism are used. There are two shaft and two pulley are used and this pulley and shaft are connected with the help of v-belt. On the shaft of the AC motor, small pulley is attached, this small pulley is attached to the speed reduction mechanism with the help of v-belt. The v-belt is used to transfer the rotary motion to pulley and shaft. The bearing is placed at the each end of the shaft which attached to the wooden plate. The bearing is used for the free and smooth rotation of the shaft

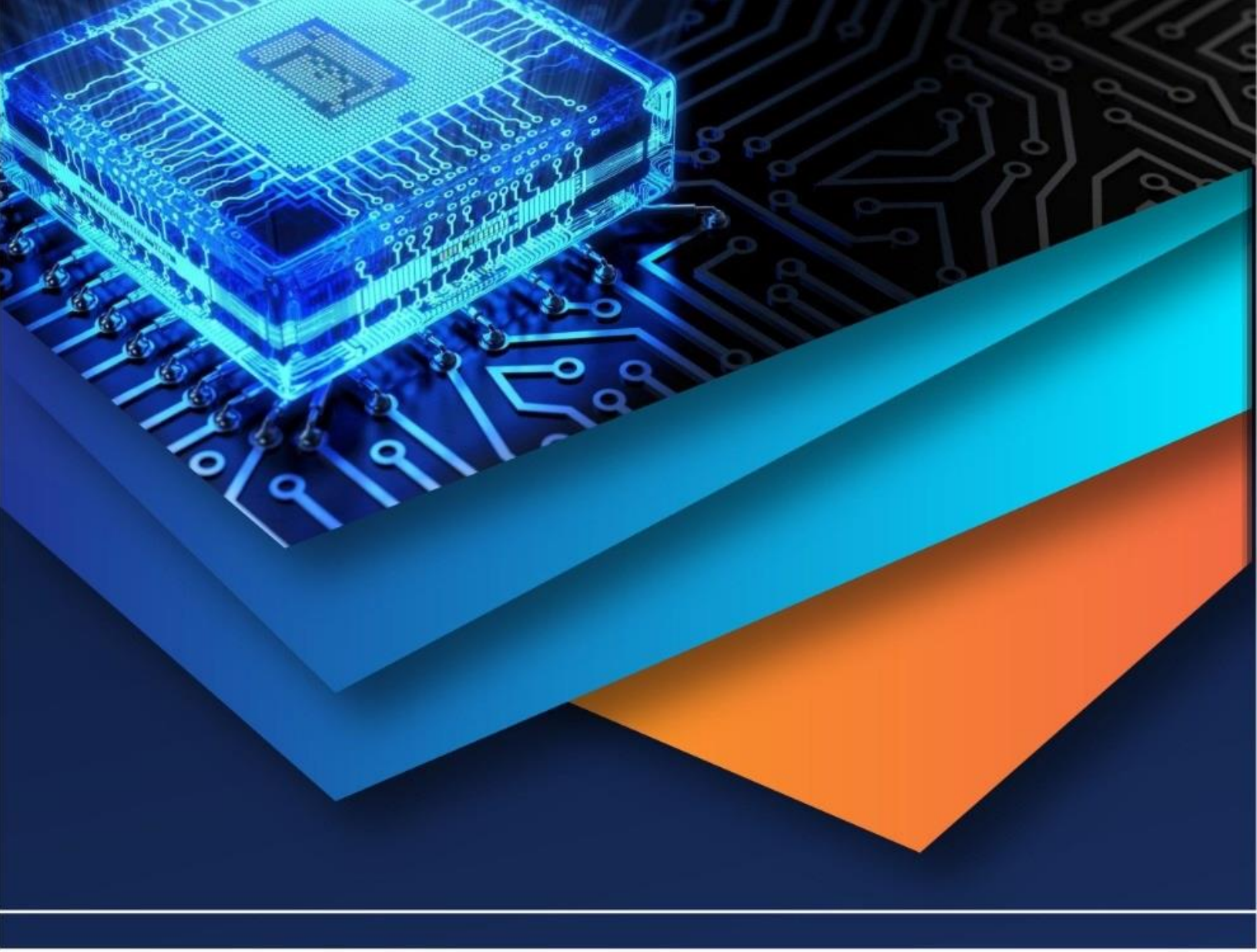
Both the spool is synchronize with the help of wire. On the small spool the magnet is attached and the hall effect sensor is attached of the wood plate and faced toward the spool. The hall effect sensor is used to count the rotation of the spool and display the count on the digital counter which placed on the wooden plate

VI. CONCLUSION

“METHODOLOGY TO BE DEVELOPING TO SYNCHRONISING PULLY FOR CUTTING EXACT SIZE OF WIRE” provides high level of accuracy and exact cutting of wires than this cutting system within the market. Thus because of this efficiency of production is increased. this method gives exact number of wires with the desired length. The circuit complexity is reduced during this system. because the complexity within the circuit is reduced, it's easy to grasp. the most advantage of this method is that the accuracy is increased and therefore the required result's obtained in very less time. The time required to chop wires is a smaller amount compared to the manual cutting of wires. because of simple hardware it's handy for the people. because the price of the project isn't high, it's economically affordable to people and has been successfully implemented within the industry

REFERENCES

[1] Hong H, Ming C.Design fabrication and failure analysis of stretchable electrical routings sensor 2014;14:11855-77.
[2] Mulik P, Kamble RK. Development of automatic transformer winding machine. IJIERT 2015;2 :1-8
[3] Willfried Schwarz; and Hamburg.(1990) “ measurements of wire for the control of the FFTB-magnets”
[4] YevgenyRapoport(Dec2012) “Design of an Automatic Machine for Stripping and Bending Insulated Electrical Wire”
[5] http://dir.indiamart.com/impcat/wire-cutting-machines.html
[6] Mahalik, TATA MGH. “Mechatronics”
[7] https://www.engineeringclicks.com/



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY