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Multifunctional Mechanical Machine

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Abstract: ***This thesis deals with the design, development and fabrication of multipurpose mechanical machine which perform four operations at a time namely drilling, bending and grinding and cutting. Today we see that these operations are the heart of any workshop /machine shop and they are indispensable, so for the time saving of any organization four different operation on four different job can be performed simultaneously. This machine is automatic and controlled by electric motor and it is based on the belt & pulley mechanism. It can be used in small scale industries & workshop to work upon thin metallic sheets and on wood in carpentry shop.***

Keywords: 1. Multifunctional 2. Mechanical 3. Operation 4. Machine

I. INTRODUCTION

A. Multi-purpose Mechanical Machine or MPMM as we call it is a machine that is made especially for the small-scale industries where labours working is have very little technology.

B. MPMM it is a machine that performs their work quickly and efficiently without the hassle of using different machines for performing different operations on workpiece. It has Four arms on which four different operations are performed.

C. Multi-operation machine as a research area is motivated by questions that arise in industrial Manufacturing, production planning, and computer control. Consider a large automotive garage with specialized shops. Industries are basically meant for Production of useful goods and services at low production cost, machinery cost and low inventory cost. Today in this world every task has been made quicker and fast due to technology advancement but this advancement also demands huge investments and expenditure.

D. Every industry desire to make high productivity rate maintaining the quality and standard of the product at low average cost. In an industry a considerable portion of investment is being made for machinery installation. So, in this project work is proposed where a machine is designed cutting, drilling, grinding, bending, some lathe operations at different working centres simultaneously which implies that industrialist will not have to pay for machine performing above tasks individually for operating operation simultaneously.

E. Economics of manufacturing: According to some economists, manufacturing is a wealth-producing sector of an economy, whereas a service sector tends to be wealth consuming. Emerging technologies have provided some new growth in advanced manufacturing employment opportunities in the Manufacturing Belt in the United States.

F. Manufacturing provides important material support for national infrastructure and for national defence. Before starting our work, we have undergone through many research papers which indicates that for a production-based industries machine installation is a tricky task as many factors being associated with it such as power consumption (electricity bill per machine), maintenance cost, no of units produced per machine i.e. capacity of machine, time consumption and may which can perform operations like drilling, cutting, grinding, bending.

II. DESIGN OF MULTIPURPOSE MANUFACTURING MACHINE

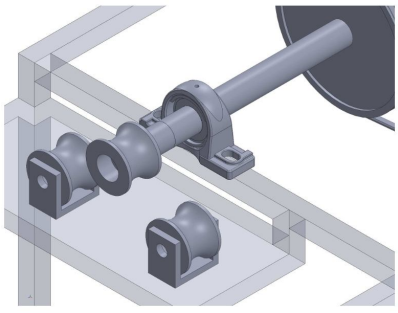

Fig 2.1 Bending

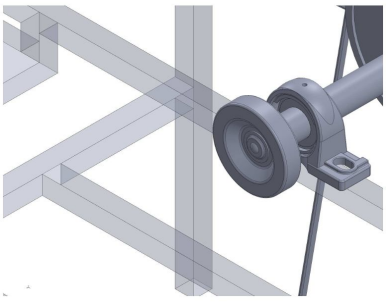

Fig 2.2 Grinding

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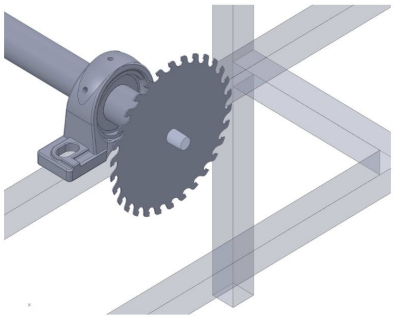

Fig 2.3 Cutting

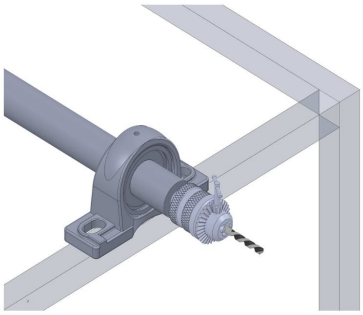

Fig 2.4 Drilling

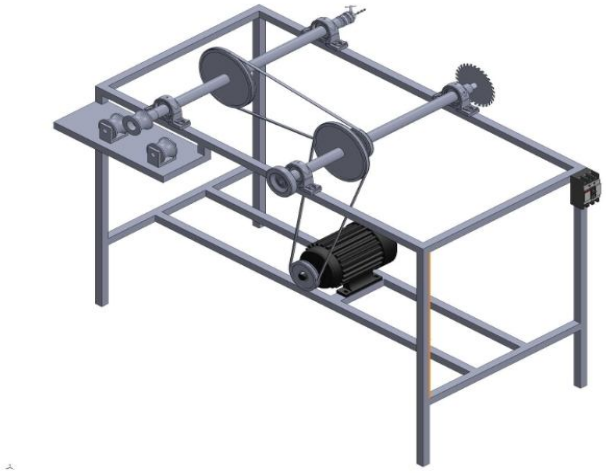

Fig 2.5 Final model

III. CONCLUSION

After completing the major project on “MULTIPUPOSE MANUFACTURING MACHINE” we can conclude that the we can reduce the working space, power, Material handling & cost of production with the help of multipurpose manufacturing machine.
The jobs are produced with high efficiency and less time with the help of different kind of mechanical operation on the combined multipurpose machine.
While making this project we have been able to learn a lot and understand the various aspect of "multipurpose mechanical machine" knowledge, which we get during our study.

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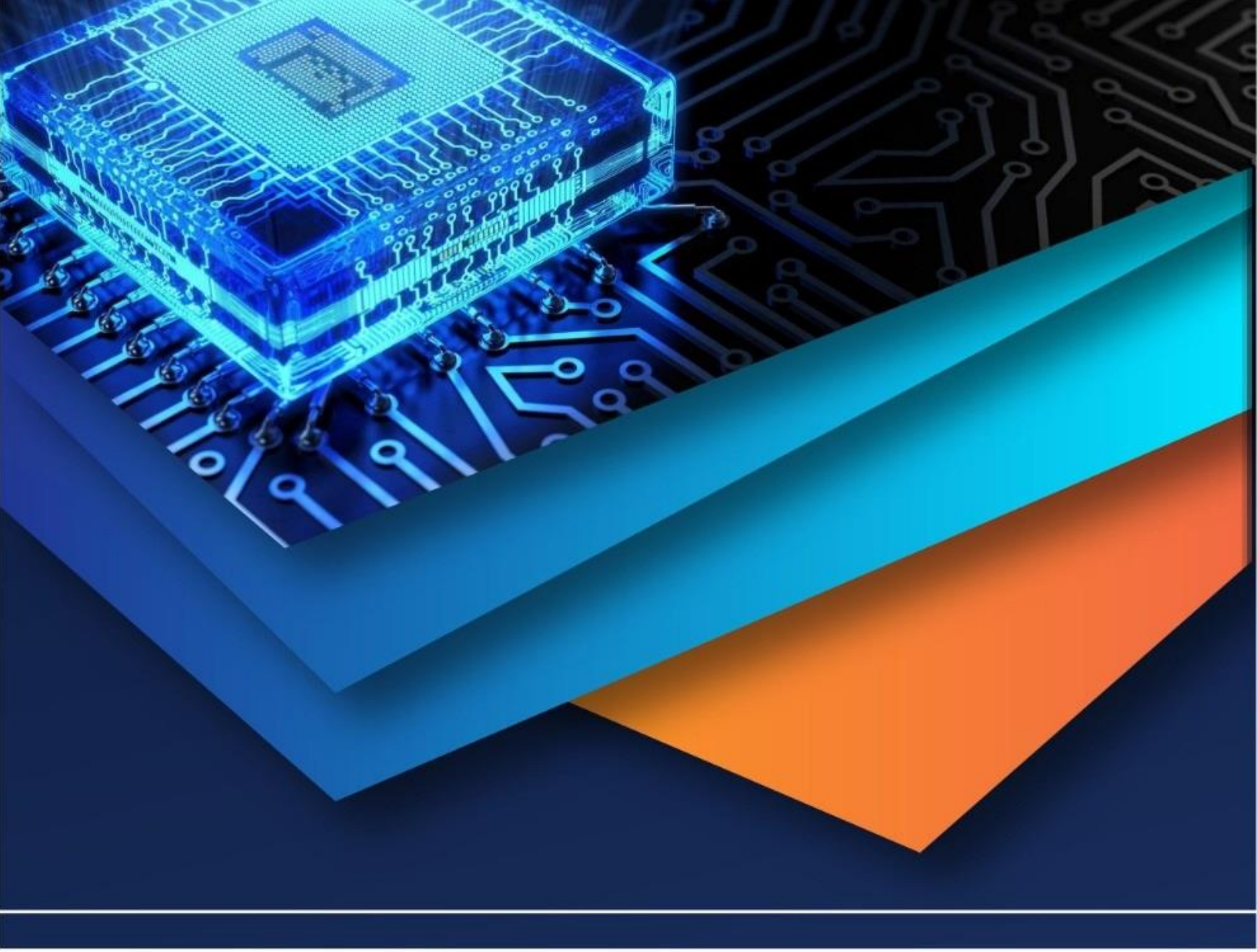

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