

MINI PANEL SAW MACHINE

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Abstract –The aim of the paper is making machine components such as shaft, bolts, screws, v belt motor etc. The main research paper Cutting wood with circular blade is a popular machining operation in the woodworking and furniture industries. Our project aims to manufacturing a machine with a sliding table to make cutting wood easier. The machine incorporates a sliding table mechanism, allowing for smooth and horizontal movement of the workpiece during cutting operations. To make cutting wood easier and more accurate for people who make furniture or do carpentry.

I. INTRODUCTION

The main feature of the machine, which allows the workpiece to slide smoothly along a horizontal axis. The sliding table is typically equipped with holding devices to secure the workpiece in place during cutting. The base of the support for the entire structure. The sliding table is a flat surface that moves horizontally along tracks or rails. It supports the workpiece during cutting and allows for smooth and controlled movement to achieve accurate cuts.

The motor powers the cutting blade and drives the movement of the sliding table. It may be an electric system. Ensure that the machine is placed on a stable and level surface. Check that the cutting blade is properly installed and securely tightened. Place the wood material flat and securely on the sliding table, ensuring that it is aligned with the cutting blade. Turn on the machine using the power switch or button. Allow the machine to reach its operating speed before starting the cutting operation. Position yourself in a safe and comfortable position, away from the cutting blade's path

1.2 OBJECTIVES

The sliding table wood cutting machine ensures accurate cuts, making woodwork look and more professional. With this machine, tasks get done quicker, saving time and effort for woodworkers. As more people use these machines, woodworking technology keeps getting better, making work easier and more efficient for everyone.

- To save the time of wood worker.
- comfortable controls and adjustable workstations.
- Quick Setup and Adjustment
- To reduce time consumption, floor area, man power and increase productivity.

1.3 EQUIPMENT USED

II. BASIC CONCEPT DESIGN

The frame provides a stable structure to support the components of the machine. It is typically made of welded steel profiles. The frame includes mounting points for the sliding carriage mechanism and other components. The mechanism of the machine should be very simple.

2.1 COMPONENT

2.1.1 Motor –

A motor with 2 horsepower (HP) and 1440 revolutions per minute (RPM) is commonly used to power sliding wood cutting machines. It provides sufficient power and speed to drive the cutting blade assembly.

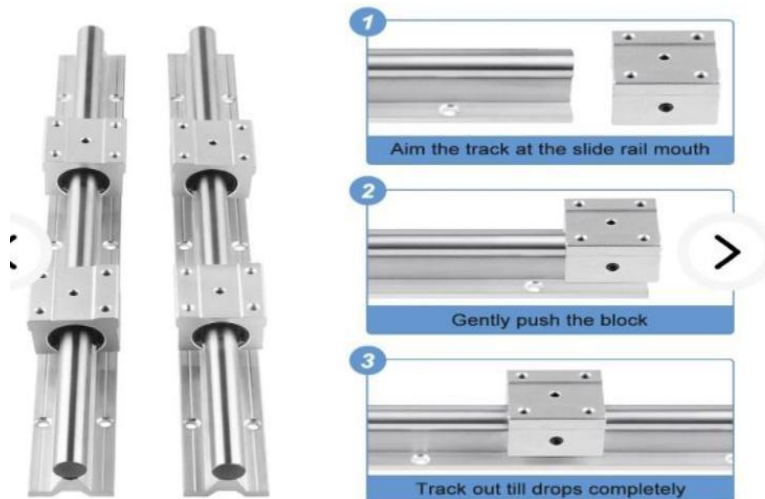
1440rpm

2Hp



2.1.2 SLIDER - 90cm LENGTH

The slider mechanism allows the cutting assembly to move smoothly along the length of the table. It consists of a carriage mounted on linear bearings or rollers that glide along a rail or track.90cm length.



2.1.3 V BELT –

In machines with belt -driven motion, pulleys are used to transmit power from the drive mechanism to the moving parts. Belts connect the pulleys and provide a flexible means of transferring rotational motion.



2.1.4 SHAFT –

The shaft may also serve as a mounting point for various components of the cutting blade assembly, such as the blade or spindle. These components are securely attached to the shaft to ensure proper alignment and smooth rotation.



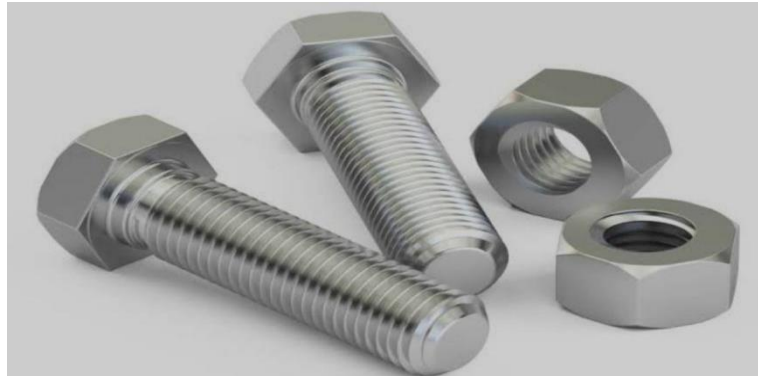
2.1.5 CIRCULAR BLADE –

In woodworking, a 10-inch blade with 40 teeth is commonly used in table saws and miter saws. It provides a good balance between cutting speed and smoothness of the cut, making it suitable for both rough and finish carpentry work. It is attached to the shaft.

2.1.6 Nut And Bolt



A nut and bolt with a diameter of 12 millimeters and a length of 150 millimeters are commonly used for securing heavy-duty components in various machinery and construction applications.



FUTURE SCOPE

Making it easier to put wood into the machine and take it out again, so workers can focus on other things. Making the machine easy for anyone to use, even if they've never used it before. the future scope of sliding wood cutting machines includes advancements in smart manufacturing, energy efficiency

III. MANUFACTURING APPLICATION

1.carpentry Workshops: The machine can be used in carpentry workshops for cutting wood materials to dimensions for furniture making and woodworking projects.

2.Construction Sites: Contractors and builders can use the machine on construction sites for cutting plywood for framing, formwork, and other structural components.

3.Furniture Manufacturing: Furniture manufacturers can incorporate the machine into their production lines for cutting wood boards, and components for assembling furniture pieces.

3.1 IMPLEMENTATION OF MANUFACTURING IN REAL LIFE –

Research and Planning: Conduct thorough research on existing wood cutting machines, components. Define project requirements, objectives, and constraints. Develop a project plan outlining tasks, timelines, and resource requirements.

Design Phase: Create detailed design specifications for the machine, including dimensions, materials, components, and assembly instructions. Utilize computer-aided design (CAD)

Fabrication and Assembly: Fabricate machine components according to design specifications. Assemble the frame, sliding carriage mechanism, cutting blade assembly, and control systems. Test fit components to ensure proper alignment and functionality.

Connect wiring and cables according to electrical schematics.

Testing: Conduct thorough testing of the machine to ensure proper operation and performance..

By following these steps, the sliding wood cutting machine project can be successfully implemented in real-life providing a valuable tool for woodworking professionals.

3.2 ADVANTAGES –

- Simple design and structure of the machine
- Simple machine reduces human effort.
- Simple machine increases the speed of work.
- Smooth operation

3.2.1 DISADVANTAGES –

- It is based on electricity.
- Cost is high.

3.2.2 OUTCOMES –

- Quality Improvement
- Cost Savings
- Customer Satisfaction
- Business Growth

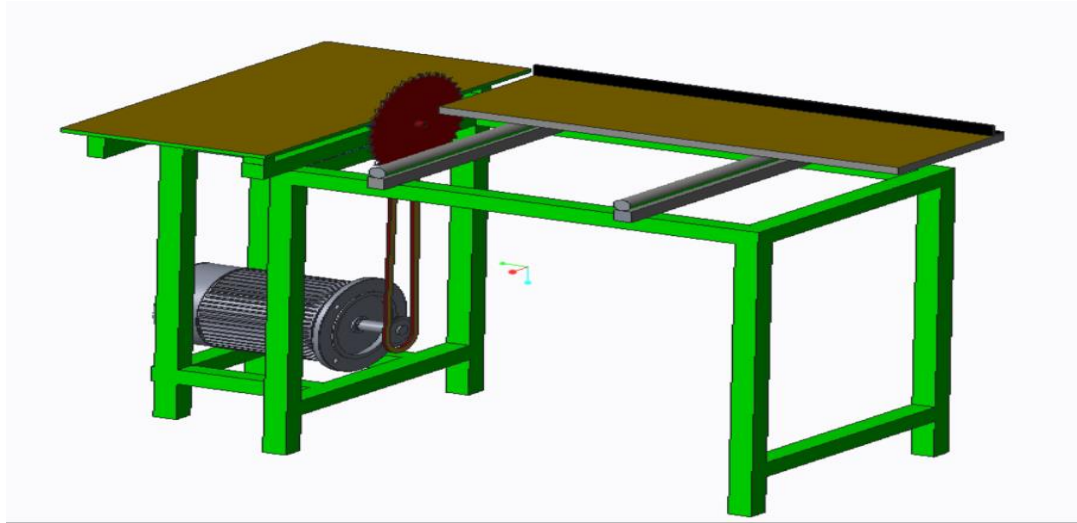
IV. RESULT

- This is the surface on which the material to be cut is placed. It provides a stable platform for accurate cutting.
- Slider: The slider is the part of the machine that carries the cutting tool or blade. It moves along the result table to perform the cutting operation.



- Cutting Tool/Blade: Depending on the material being cut, the machine may be equipped with various cutting tools or blades. For example, in woodworking, it might have a circular saw blade, while in wood working, it might use a blade suitable for cutting wood.





AUTOCAD DRAWING 3D

V. CONCLUSION

The sliding wood cutting machine project has been success for our woodworking operations. This project aimed to STRIGHT cutting ,our expectations in every aspect. As per conclusion we find cutting the objects are made easier. The different mechanical components and devices are installed in the machine, The whole cutting process can be performed and due to which it minimization the cutting time. As per conclusion we find cutting the objects are made easier. We are confident that the benefits of this project will continue to drive our success in the future.

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