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# Design and Fabrication of Dual Side Shaper Machine

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**ABSTRACT:** A shaper is used to machine a single job by using a single point cutting tool and hence it cannot be used for high production rate. A small Scotch yoke mechanism has been thus devised to demonstrate the dual side machining time reduction in shaping machines. This shaping machine has an idle stroke during its return motion. This project uses the idle stroke as cutting stroke and hence increases the production rate. This can be achieved by an addition of clapper box with a tool such that the arrangement on tool and the arrangement on tool holder has one tool clamped on the clapper box individually. The motor source of power with switch accessories is used to drive the ram on the guide plate to obtain the forward and return strokes. By this arrangement the machining time of a work piece is reduced by the half the time.

**KEYWORDS:** Scotch Yoke Mechanism, Ram, Dual Ram Turning Motion, Dual Side Shaper

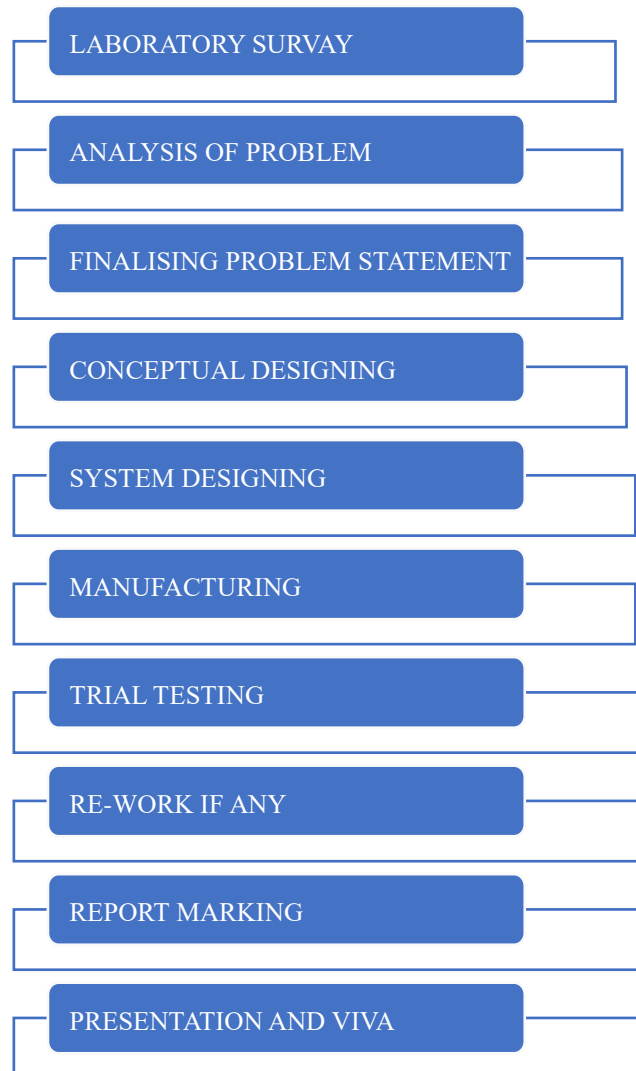
## I. INTRODUCTION

The Dual Side Shaper Machine is a specialized cutting tool that is widely used in the manufacturing industry for shaping and cutting a variety of materials such as wood, metal, and plastic. The machine is designed to work on both sides, making it an efficient and productive tool for reducing production time. The dual-sided feature allows the machine to work on two materials simultaneously, thereby increasing productivity. The machine is equipped with a cutting tool that can create different shapes and designs on the materials, enabling the production of various industrial components, furniture, and machinery parts. Overall, the Dual Side Shaper Machine is an essential tool for any manufacturing industry looking to improve efficiency and productivity. The purpose of manufacturing a Dual Side Shaper Machine is to provide a highly efficient and productive cutting tool that can shape and cut various materials like metal, wood, and plastics on both sides simultaneously.

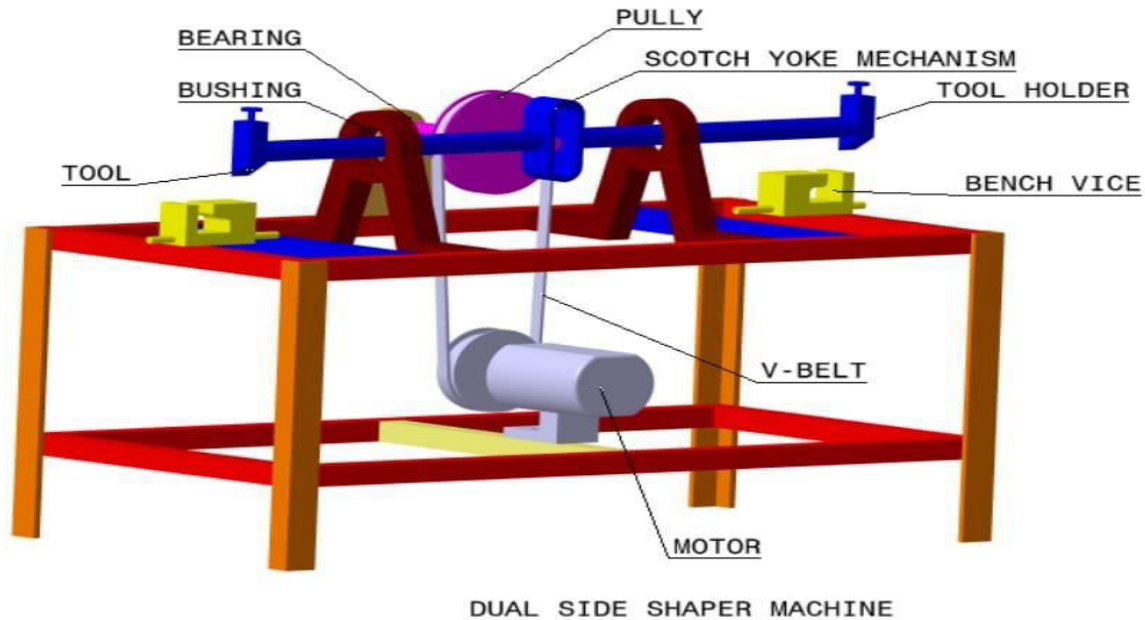
## II. RELATED WORK

shaping machine is a machine that can give desired shapes to surfaces. It is commonly used to produce vertical, horizontal, and inclined planes. It can also be used for electric discharge machining. The most common use of a shaping machine is to machine straight, flat surfaces. Other examples of its use include: Keyways in the boss of a pulley or gear Dovetail slides Cutting surfaces that are at different unusual shapes A shaping machine uses a quick return motion mechanism. It uses only one tool, which is attached to the workpiece and moves forward and backward. A disc is responsible for the tool rotation which results in the forward and backward movement.

### III.METHODOLOGY



#### IV. DESIGN AND MANUFACTURING



A]

The shaper machine is a reciprocating type of machine basically used for producing the horizontal, vertical or flat surfaces. The shaper holds the single point cutting tool in ram and workpiece is fixed in the table.



B]



C]



D]

- A toolholder is the interface between a precision machine spindle and a precision cutting tool. The toolholder has three base elements; the taper connection, there training device and the cutting tool connection.
- In machining, a shaper is a type of machine tool that uses linear relative motion between the workpiece and a single-point cutting tool to machine a linear toolpath. Its cut is analogous to that of a lathe, except that it is (archetypally) linear instead of helical.
- The Scotch Yoke Mechanism is the reciprocating mechanism that converts rotational motions to reciprocating motions or vice-versa. It is also known as a slotted link mechanism. This mechanism is an inversion of the double slider crankshaft.

#### V. CONCLUSION

In this paper, a dual side shaper is designed and fabricated. This dual side shaper machine is used to manufacture components similar to a standard shaper machine. However, the machining time required for this dual shaper is less as compared to the normal shaper. Hence, the production rate is increased in the dual side shaper machine when



compared to the normal shaper. The designed dual shaper has been used for only trial production. In the future it would be used for commercial production in industries.

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