

UNIVERSITI TEKNOLOGI MARA

**DEVELOPMENT OF A PROTOTYPE SEMI-AUTO
SCREEN-PRINTING MACHINE**

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ABSTRACT

The semi-autonomous screen-printing machine prints any desired screen-printed item on paper or clothing in a semi-automated manner. Another problem that arose in this field of screen printing was the hand production of screen-printed objects, which slowed down the process. This happened because it takes a long time to produce screen-printed goods because human labour is needed. The extrude boss and extrude cut techniques are mostly used in the construction of this machine, and the crank and slider calculation is employed. According to my research of the machine's design in Solid Work, the mechanism's connector will be subjected to a lot of stress, but I took every effort to prevent that from happening so that my prototype could operate as intended. Since the SolidWorks design model is utilised as a guide with the same dimensions to produce the final prototype, there aren't many variations between the SolidWorks prototype design and the final prototype. The real prototype and the design would inevitably differ slightly. For example, the design does not include screws, bolts, nuts, or washers, while the real prototype includes. In conclusion, despite its partial automation, this device facilitates the ink sliding process without requiring human labour, which speeds up the manufacture of screen-printed goods. Finally, I think that this machine will be very beneficial to the screen-printing sector and that someone will eventually increase its capabilities.

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Finally, this dissertation is also dedicated to my father and mother for the vision and determination to educate me and never stop giving me the best support in everything that I do and never pushed or pressured me in my study here as a mechanical engineering student. This piece of victory is dedicated to both of you. Alhamdulillah.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Many different sorts of machines have been invented in this globalization-era to make people's lives easier and to make things or produce things more quickly. An idea is developed to stay up with current technological advancements, and this proposal will present it. The primary goal of this project is to make it easier to produce any screen-printed goods without requiring an excessive amount of labor or forcing people to labor beyond their capacity. Here, screen printing refers to a printing method wherein a mesh is utilized to transfer ink (or dye) onto a substrate, except for places that are blocked from the ink by machines. Screen printing is generally understood to involve moving a blade or squeegee across the screen to fill the open mesh apertures with ink, followed by a reverse stroke that briefly makes the screen touch the substrate along a line of contact. As everyone is aware, small businesses typically generate most screen-printed goods by hand without the aid of machines.

This idea here is to also move or insert the screen-printing process that is usually done manually by human into a simple-designed machine. From here, the usage of mechanism comes in, that will specifically help the machine to operate automatically or semi-automatically. Users of this machine could finish the process of screen-printing any items faster and smoothly plus, the finishing touch would be more perfect and beautiful than the ones that is done manually without burdening the human energy. Any process that goes through manual way uses too much unnecessary procedures and that is something that we would not want to go through in daily life and especially in business life or industry.

Very fast developments also have taken place in the printing technology during the last decades with respect to machinery used for printing and production of prints and after treatments of the printed textiles. Nevertheless, this project could be one of the machines that could improve the and carry this printing technology to a higher level.

The aim of this project is to help fasten the process of screen-printing paper and fabric without the use of human power. Through this project, the enhancement and redesigning the Semi-Auto Screen Printing Machine will be done by using state-of-art SolidWorks 2019. The newly designed machine will be fabricated as a proof of concept.