iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** V **Month of publication:** May 2022

DOI: https://doi.org/10.22214/ijraset.2022.43046

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: 7.538
Volume 10 Issue V May 2022- Available at www.ijraset.com

Research Paper on Screen Printing Machine for Cylindrical Shape

Prof. Roshan Singh More[1], Mohd Sohel Raza[2], Pratik Sirsat[3], Vaibhav Ingale[4], Rahul Kurhade[5], Dhananjay Ladole[6]
[1]*Assistant Professor,* [2, 3, 4, 5, 6]*Ug Students, Department of Mechanical Engineering, HVPM COET Amravati, Maharashtra, India*

Abstract: ***Screen printing is a technique of applying a pressure of certain quantity of colouring agent into a specified surface to form a text and lot of development is taken place. Screen printing has application in Wedding cards, Stickers printing, T-shirts, Business cards and textile industries. We have introduced a screen printing machine for cylindrical shape. Cylindrical Screen Printing equipment prints cylindrical objects with a flat printing screen. It works for printed objects like bottles, buckets, drums, etc. Cylindrical printing press can put a more thick, clear color than label printing. At the same time, with its direct color putting, an automatic cylinder printing equipment may finish the all printing process only needing you to put the object on the enter.***
Keywords: Screen Printing , cylindrical shape

I. INTRODUCTION

Printing is a process of reproducing text, or images typically with ink on paper using a machine. Screen printing is a stencil based process; it consists of closed non images and open image areas. It is based on the principle of squeezing the ink through the open area of screen on substrate. The squeeze is moved across the stencil screen which forces the ink through the mesh opening to wet substrate during to and from motion of squeegee. Screen printing technology is a way to optimize and obtain the most cost effective facility of applying and patterning different layer for hybrid electronic industry, paper printing industry and textile industry. In this machine we make a cost efficient for those people who can not afford a screen printing machine to start a small business.

II. MATERIALS REQUIRNMENT

1) A suitable stencil wooden frame with polyester mesh.
2) A suitable squeegee with rubber at particular angle of cut section.
3) A galvanized slotted Ms angle steel body for all mountings.
4) A roller for mounting of cylindrical shaped assembly. (ex. drum)
5) A ball bearing telescopic channel.
6) Printing ink.

A. Stencil Wooden Frame



Fig 1. Screen

A screen is made of a piece of mesh stretched over a frame. The mesh could be made of a synthetic polymer, such as nylon, and a finer and smaller aperture for the mesh would be utilized for a design that requires a higher and more delicate degree of detail. For the mesh to be effective, it must be mounted on a frame and it must be under tension. The frame which holds the mesh could be made of diverse materials, such as wood or aluminum, depending on the sophistication of the machine or the artisan procedure. The process of forcing ink or colour through a porous fabric and open area of stencil to produced an image.

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue V May 2022- Available at www.ijraset.com

B. Squeegee



Fig 2. Squeegee

These are aluminum plate fixed with rubber which squeezes the ink through the mesh to print on the substrate. The dimension of the squeegee varies from 1 inch to A5 inches. Different types of squeegee are triangle cut and square cut type. We introduced two squeegees one which spread the ink uniformly on the stencil frame during forward stroke and squeezes the ink while return stroke by another squeegee.

C. Mild Steel Body



Fig 3. MS Body

A system of reusable metal strips used to construct shelving, frames, work benches, equipment stands and other structures. The name derives, first, from the use of elongated slots punched into the metal at uniform intervals to enable assembly of structures fixed with nuts and bolts, and second, from the longitudinal folding of the metal strips to form a right angle.
To construct items from slotted angle, items can be cut to size (some versions are marked to show the optimum points at which to cut the metal) using special slotted angle cutters or shears, and then fixed with nuts and bolts. Tension plates and other metal strips are also available to add strength to the finished structure.

D. Roller



Fig 4. Roller

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue V May 2022- Available at www.ijraset.com

In this printing operation we need a stand who can rotate with our spherical drum so we use roller. in this machine we pull a screen first then as well as the drum will rotate with the help of roller. The drum is mounted on roller so we can easily rotate drum and do our operation properly.

E. Ball Bearing Telescopic Channel



Fig 5. channel

With the help of this ball bearing telescopic channel we can pull or push the screen. And the operation will get smooth as well as time saving.

F. Printing ink

Type of ink used for printing depends on the substrate. Preparation of ink containing proportional amount of thinner plays an important role in quality of texture to be printed.

The resistance to flow is called viscosity and it is one of the most important reological parameters not only of printing inks. The dynamic viscosity is a measure of the internal friction of a fluid and is determined from the quotient of shear stress and shear rate.

III. WORKING PRINCIPLE

We have made a fully manually operated screen printing machine for cylindrical shape. First open the screen and put our workpiece on the roller mounting then close the screen.

Now we take ink on screen and pull screen and with the help of Squeegee we stare the ink on screen as we know that the screen is made like that the porous on when we stare ink then the ink goes inside the porous and when we pull the screen we get print on workpiece as well as we pull the screen the workpiece also rotate with the help of roller and we get the perfect print.

IV. CONCLUSIONS

As per our objective, we have developed a Flat Screen printing machine for cylindrical shape having low cost. The printing quality is increased due to knowledge of screen tension effect on print quality. This project helps to open your low cost printing business.

We have conclude This machine can be used in printing small as well as large number of objects.

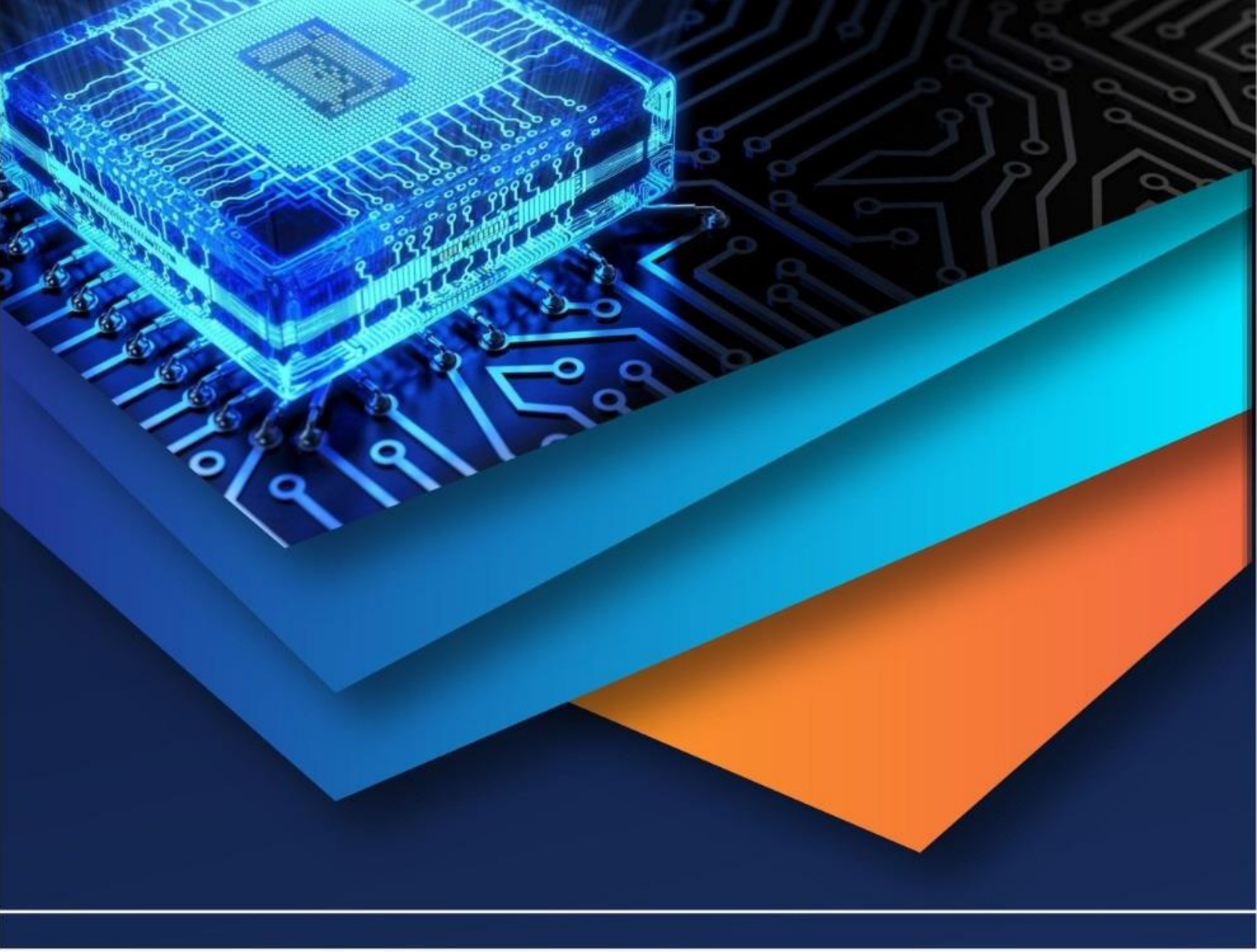
V. AKNOWLEGEMENT

We take this opportunity to express our regards and sincere thanks to our advisor and guide Prof. Roshan Singh More sir. His constant encouragement and moral support gave us the motivation to carry out the project successfully.

REFERENCES

[1] Richard W. Bulliet, “Printing Journal of the American Oriental Society’’ 107 (3), p. 427-438. 1987.
[2] Selejdak J., Stasiak-Betlejewska R., “Determinants of Quality of Printing on Foil”, Journal of Machine Engineering, Vol. 7, No. 2, pp. 111-117, 20.
[3] TsienTsuen-Hsuin; Joseph Needham Paper and Printing. Science and Civilization in China. 5 part 1. Cambridge University Press. pp. 158, 201, 1985.
[4] Eszter Horvath, Adam Torok, Peter Ficzere, Istvan Zador, Pal Racz, Optimisation of Computer-aided Screen Printsing Design, vol. 11, No. 8, 2014.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)