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## PROPOSED DESIGN OF FABRIC LAB COATER

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## ABSTRACT

The fabric is protected by applying covering on it. Covering is a coating that is applied to the surface of a fabrics, it is usually referred as the substrate.[1]Coating is very important process in terms of fabrics. To increase the life of the fabrics, coating on the fabrics is necessary. Coating is applied on the fabric by the coating machine. There are different types of coating machines are available for mass production, but the present work deals with the coating of fabric for carrying out various testing operations before going for mass production of the same. Lab coating machine is small in size and is used to coat the small piece of fabric effectively for testing it. Testing of fabrics is very important to ensure the coating quality, precision, coating thickness, waterproofing, stiffness, durability to the temperature and various other factors. If any problem is identifies in such tests, then it could be resolved before going for mass production and thus huge capital, time and efforts could be saved.

*Keywords:  Fabric, coater, coating, substrate.*

## I. INTRODUCTION

Coating is a covering of a specific liquid on the fabric. Coating is the process carried out in the fabric. In fabric industry coating is considered as the important process which is carried out in fabric industry. In fabric industry coating is the considered as the important process on the fabric. Coating is the essential process in the case of the fabric. Now a days the need of fabric is growing but the fabric must be the coated fabrics. The Uncoated fabrics are not in demand, because of its low service life. Improvement in coating is also increased the service life. The Uncoated fabric is not in demand as compared to the coating fabric by above explanation we can say the coating fabric has more service life than uncoated fabrics. The liquid which is used to coating the fabric is Tolven... As the service life is increasing the demand of customer also increases. We increase the service life of the fabric by applying coating on it.

There are different type of fabrics and different type'smaterials of the fabric. After applying golden coating on the fabric the thickness of the fabric is increased. The thickness of the fabric is measured by the fabric coating gauge. In any major fabric industry the size of the coating machine is very large. In industry there is no sample machine available for the testing of the fabric coating. Testing the fabric coating is the important process; it should be carried out in any industry. The testing of the fabric it should be avoided in any industry because of unavailability of testing fabric coating machine. The fabric Coating machine is named as the lab coating machine. To avoid losses we design a lab coating machine. This lab Coater is used to testing the fabric. Covering is the coating that is applied to the surface of the fabric it usually referred as the substrate [6]. Before the fabric is coated on the coating machine, the fabric is tested on the lab coating machine. The lab coating machine test the fabric and it avoid the losses which causes on the fabric and the coating machine. Lab Coater is a coating machine which is used in lab to test the fabric. Lab Coater does the efficient coating layer by layer on the fabric. The coating is done to improve the quality of fabric [7].Lab Coater is a simple in design. Lab coater work manually. It does not require a skilled labor to operate the machine. It is in small structure. Lab coating machine are having great scope in industry. To increase the service life of the fabric and also to satisfy the customer need coating is necessary.

## II.    DESCRIPTION OF MACHINE

The above fig shows the design of the lab Coater. The coating machine is used to apply coating on the fabric. The design of lab Coater is very small and simple in structure the operation performed on the lab Coater is manually. To avoid the losses on the fabric and the coating machine the lab Coater is used. It is also coated the mini model of the coating machine. The size of the lab Coater is taken as per our requirement. Lab Coater machine does not require a lots of efforts to operate the machine. As the operation of the machine manually power supply is not required. The Tolven poured manually in the lab Coater on the fabric. The coating of fabric is in demand as compared to the uncoated fabric. If we want the more service life of the fabric then we must used the coating fabric. If we want more life of the fabric, then we must be used the coating fabric.

In industry fabric after coating are check for quantities material and surface condition.[8].The fabric must be determined on the customer demand. The lab Coater is used to test the fabric before applying it on the coating machine.  As the machine operation manually it does not require any skilled operation to operate that machine. The structure of machine is simple by observing the machine we can identify the working of the machine. Each parts of the machine have its own specification. The table is used to support the frame on the upper side of the table lead screw is attached to it by the supporting clamps. The lead screw is used to power generation. At the centre of the lead screw knife is attached to it...knife is adjusts by the screw .The fabric is supported by the pins...The four pins are attached to the frame to support the fabric...It is called the fixing pins.
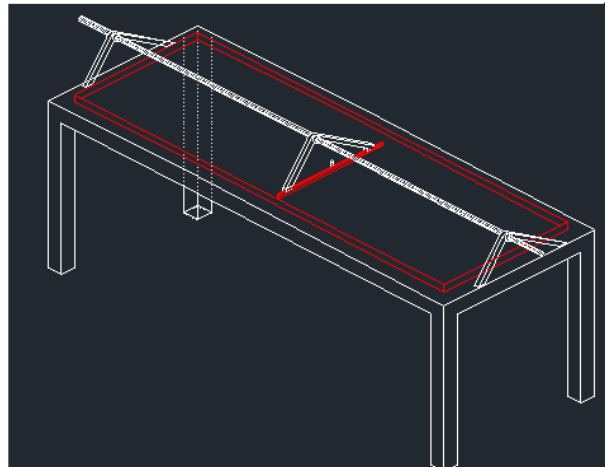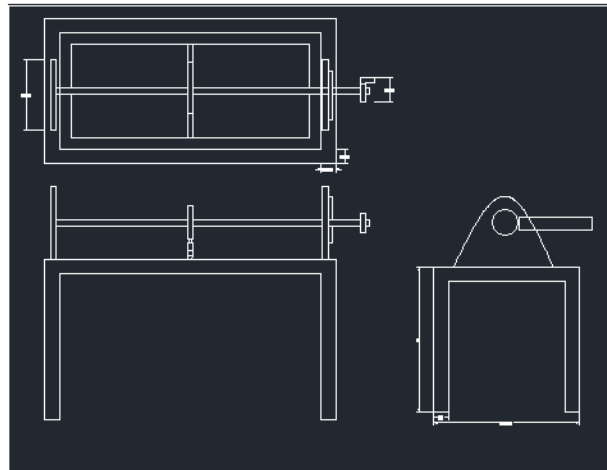


*Figure No. 1 (a)*

*(b)*

## III.    DISCRIPTION OF PARTS

1.   Frame: - The frame is used to support the whole structure of the equipment.  It must be rigid enough to carry the whole load of the machine. Frame is the main part of the machine. Without frame the structure is not possible.
2.   Supporting Table: - The supporting table used in the machine is used to support the fabric.  It should be plain without any waviness. Supporting table supports the all parts of the machine. Support is necessary to remain stable at the position.
3.   Fixing Pins: - Fabric must be well placed on the table, it not to be slip for that purpose the pins are used. Pins are used to fix the fabric. The fabric should be fixed tightly on the frame. Fixing pins are used for fixing purpose.
4.   Lead Screw: - It is the main element of the machine, which is used to give motion to the knife.Lead screw is used transmit the power. Lead screw supports the knife. Lead screw gives motion to the knife.
5.   Knife: - The knife is used to spread the coating material on the fabric. Knife used to spread the tolven layer by layer on the fabric. Knife is attached to the lead screw.To and fro motion is carried out by the knife.
6.   Adjusting Screw: - Adjusting screw is used to adjust the thickness of the layer.

## IV.    MECHANISM

Figure 1 a,b shows the developmental drawing of the proposed machine. There are mainly two types of mechanism are used in lab coater; driving mechanism and a simple mechanism for adjusting knife.

**1.Driving mechanism**:- the mechanism used to move the knife on the lead screw, is screw and nut mechanism which is used in screw jack in which nut is fixed and lead screw is moving but in our design the lead screw is fixed and the nut is moving, knife is attached to the nut.We have to convert rotating mechanism into reciprocating mechanism hence the rotary motion is given to the lead screw and with the help of above mechanism we a can achieve reciprocating mechanism.

**2. Knife adjusting mechanism**: - Coating of different thickness is having to done on the fabric for the knife must be movable hence to achieve this we connect the screw to the knife, by rotating the screw we can vary the layer thickness.

## V.    WORKING

The important parameter of any machine is working of the machine. Some time working of the machine is complicated and some time the working of the machine is easy. When the machine is manually operated, then the working of machine is quite easy than the automated machine .Lab Coater is a manually operated machine. So, by observing the machine we can identify the working of the machine of the lab Coater. The purpose of applying the coating on the fabric is to protect the fabric .The protection of the fabric increased the life of the fabric. Lab Coater has huge scope in engineering world. In any major industry testing of fabric is necessary to avoid the loss of the fabric. The all part of the lab Coater has its different application and the working. The structure of the lab Coater as the supporting table is process to it to support the frame. The fabrics is attached to the frame by the filming the pins. So we called it as fixing pins. The knife is attached to the lead screw. The knife is attached to the lead screw by the screw. The knife is adjusted as per the requirement. First of all take the price of the fabric, which have to be tested. Then fixed the fabric by the four pins called the fixing pins attached the frame.

The tolven is the material used to coat the fabric. The knife which is attached to the lead screw is adjusted as per the desire. The tolven is pouring on the fabric. The handle is given at the screw which is used to operate the machine. Give the motion to the handle; the lead screw rotated. The lead screw further gives the motion to the knife. The lead screw is used to transmit the power. The motion of the knife is to and fro. The tolven apply on the fabric. It tested the fabric by the manual process. Testing the fabric is considered as the important parameter. By observing the all the parameters we design the lab Coater to test the fabric. While do soldering the entire factor we observed that the gross machining performance. It also gives importance to the coating morphology, coating roughness [9]. To operate this lab Coater a skilled labor is required to operate the machine. The operating cost is very low. The operation performed is very easy. The working of the machine is easy. It is beneficial in the industry to avoid the major loss of the fabrics. Different types of the fabrics can be also checked on the lab Coater. The design of lab Coater is very simple so our. This machine is designed to avoid the loss of the fabric.The principle goal of the fabric presents the investing and by considering the parameters [10]. The coating were characterized by the property apply on it.

## VI.    CONCLUSION

In the fabric industries, before mass production of the coating fabric a small piece of fabric could be coated on lab coater for ensuring various parameters and in case any problem found it could be rectifies before going for mass production. Thus lab coating machine saves loss of the man, machine, material and timing also.  Proposed lab coater is small and also easy to handle, even one operator can handle the process on it, thus makes it suitable for using in the research lab of the industries.

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