

Quick Portable Cloth Drying Machine

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Abstract – As technology continues to progress human civilization has begun to enter into new world. In many parts of India like Cherranpundi, Shimla and other humid regions in foreign countries, it is observed that clothes are being wet for many days after the wash, so as the people suffer. So the invention of quick portable cloth drying machine helps in solving out these problems. The quick portable cloth drying machine helps in drying out the clothes in all seasons.

Key Words: Shaft Rotation, Electric Powered, Clothes Handling, House Hold Application.

1. INTRODUCTION

Decreasing in energy losses and heat recovery is one among the important research topic. Natural drying of clothes in housing areas are prohibited for aesthetic reasons. The modern conventional electric cloth dryer are expensive and inefficient. Today, laundries have their own drying cabinet to prevent the risk for clothes that might get dirty. The idea is to make the difference in modern spinning concept in cloth drying machine.

2. OBJECTIVES

It is to develop a quick portable cloth drying machine which has a moveable wheels and industrial blower. The project required all the knowledge about the shaft, metal frame, mechanical design ansys and also welding skills.

- Develop the Quick Portable cloth Drying Machine which can dry up cloth in a short period
- Design the Quick Portable Cloth Drying machine with suitable geometrical shape.
- Analysis the frame structure and the shaft that supports the load of the clothes.
- The time consumption and effort will be reduced simultaneously.

3. LITERATURE SURVEY

- I. HimsarAmbarita , Abdul Halim Naution, Nelson M. Siahan developed a clothes drying cabinet by utilizing waste heat from a split-type residential air conditioner. The drying chamber utilized waste heat from residential split-AC with compressor power and dries the clothes.

- II. Chao-Jung Liang developed a cloth drying machine comprising a housing with a drying chamber and used heat exchangers coils to produce heated convection currents circulating through the drying chamber.
- III. Albert W, Kruzan invented a cloth drying apparatus and more particularly to a clothes conditioning device which is operable to treat the clothes in dryer while the dryer is in operation.
- IV. Kalyankar A.N, Kedar A.R, Kale B.R developed a cloth dryer and dehydrator as a single unit and used the machine for cloth drying purposes.

4. DESIGN

DESIGN AND FABRICATION OF CLOTH DRIER

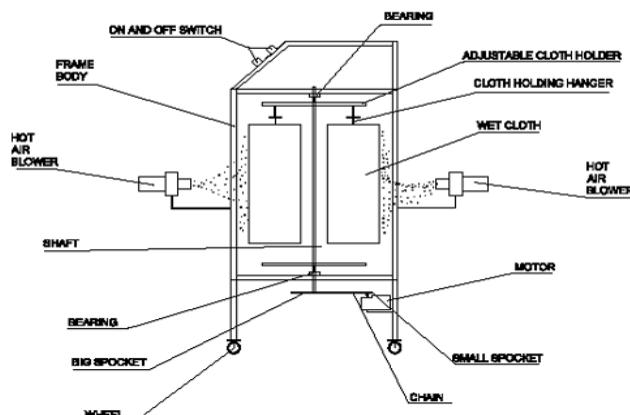


FIG-1. Design of cloth drier

Parts of Main Assembly

1. Shaft
2. Industrial Blower
3. Sprocket
4. Bearings
5. DC Motor
6. Drying Cabinet for clothes
7. Hanger
8. Doors

4.1 Design Flowchart :

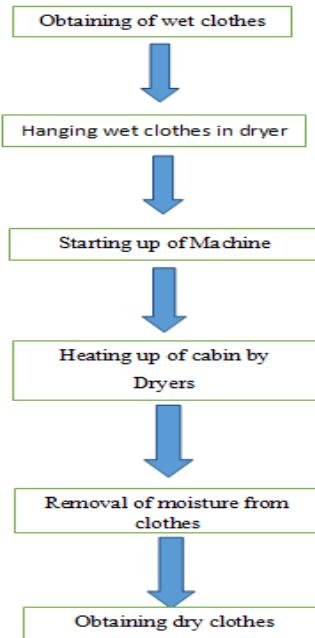


Fig-2.Flowchart of working mechanism

4.2 Design Methodology

1. **Problem detection:** The earlier and existing machines are studied and the problems are detected that has been faced by customers.
2. **Enhancement in Drying Technology:** The traditional drying clothes process was studied and new method was developed to achieve the goal.
3. **Operation:** In this machine the clothes are dried efficiently and effectively.
4. **Safety to the customers:** Higher priority has to be given to the customers.

4.3 Working Procedure

- Select the partially wet clothes needed to be dried.
- Place the clothes on the given hangers and attach it to the horizontal rod.
- After placing close the system using the given doors.
- Turn ON the system.
- With the help of the slowly rotating vertical shaft and the blowers, the moisture from the clothes are removed away by the help thermal convection process.
- After the desired time, clothes are removed from the system and hence the clothes are dried.

5. COMPONENTS DESCRIPTION:

Different components used in this project are as given below:-

5.1 SHAFT:-

- A shaft is a element which is used to transmit power.
- The power is obtained due to tangential force with help of gears and chain drives.
- Stresses on shaft occurs due to the force exerted by the clothes hanged.

5.2 INDUSTRIAL BLOWER:-

Industrial blower is type of machine whose main function is to provide an large flow of air to the chamber. The air flow velocity of the blowers that we used is 199mm/sec.

5.3 BEARINGS:-

Bearing is one of the most commonly used. Bearing has it as a point contact surface. We use ball bearing in order to avoid the high friction between mating surfaces.

5.4 SPROCKET:-

The sprocket is a cogged wheel having a chain, track of indented material. The sprocket wheel is used to transmit the mechanical energy into the other parts.

5.5 DC MOTOR:-

DC Motor is abbreviated as direct current motor which provides constant starting torques irrespective of load carrying capacity. They are of low cost compared to AC Motors.

5.6 DRYING CABINET FOR CLOTHES:-

It is made up of Mild Steel frame which is surrounded by sheetmetals. It has a square dimension of 25mm with 2mm thickness.

5.7: HANGER

Clothes hanger is made of steelwire. Ordinary aluminium wire are not stiff enough for this application. They are used to hang the clothes.

6. FUTURE SCOPE

Our equipment Quick Portable Cloth Drying Machine can be automated, and can be improvised by following methods:

- Can be improvised by adding speed controller for the blower and for the shaft rotation.
- Can be automated by using time controllers.
- Can be automated by using sensors to sense out the moisture in the closed system.

7. CONCLUSION

The final configuration has been demonstrated to achieve the significant energy savings and fabric care along with significant reductions in total dry cycle times. This dramatic improvement in performance is achieved, by maximizing the output capacity, the blower was able to deliver 30-50% energy savings and dramatically lower cloth temperatures in total dry times for varying types of clothing loads that were similar or faster times than the market-best standard electric dryers. The cloth dryer found to be:

- Simple in design and easy to fabricate.
- Easy to handle the equipment.
- Economical.
- No need of skilled labour.
- Equipment is portable.

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