A

PROJECT REPORT

ON

**“Cyclone Dust Collector For Textile Industry”**

Submitted by

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**CERTIFICATE**

This is to certify that, **Mr. Shaikh Zibriyal Z H, Mr. Gundgole Raviraj Dilip Mr. Vhanmare Dareppa Dhanraj, Mr. Kale Kaustubh Ashok** students of B. E. (Mechanical) of V.V.P.I.E.T. Solapur, has successfully completed the project report on “Title of the project” in the partial fulfillment of degree course in the Mechanical Engineering, of Solapur University, Solapur during the academic year 2016-2017.

Place: Solapur Date- / /2017

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ABSTRACT

Cotton dust in the workplace is major problem in cotton textile industries. These problems are more severe in spinning section. Dust consists of small and microscopic particles of fabric which are present as suspended particle in air. These particles harmful to human health. Because of this various diseases occurred like shortness of breath, cough and lungs cancer. Various aspects of health hazard in textile industries have been discovered and measure hazards in lungs cancer to reduce this health hazards in lungs cancer out dust collector is helpful.

The major health problems associated with cotton dust are health of worker in textile industry. The aims of the works are remove of dust particles occupational health hazards among the workers in “Rajesham Mallayya Pogul” factory and to assess the different protective measures used during working day to prevent the different hazards.

Fabric dust enters the body by inhalation, and fine dust containing fibers may be deposited in the alveoli. The fibers are insoluble. The deposited in the lungs causes fibrosis, pleural plaques, and bronchitis and lung cancer. Textile dust results in impaired lung function after long period of exposure. The symptoms shortness of breath, chest pain, and later bronchitis with increased sputum. There is a need for textile mills to reduce the dust levels in the scouring, spinning and weaving sections. The exposure of workers to dusts from material such as silk, cotton, wool, flax, hemp, sisal, and jute can occur during weaving, spinning, cutting, ginning, and packaging. Division of tasks along gender lines may mean that women are exposed to organic dusts more than men, with respiratory diseases being diagnosed more often in women than men. Exposure to fibers and yarns may cause nasal or bladder cancer.

In India the textile industry contributes substantially to the foreign exchange earned by the country. The textile industry is providing employment opportunities to numerous people in country. Information regarding cotton dust exposure impacts and the control strategies is lacking among textile employees and management. The main aim of this project is to provide awareness in textile industry and management to establish cotton dust control strategies to save their workers from these harmful impacts. Hence the dust collector equipment helps to reduce the dust to enter through breathing in lungs and create healthy environment.

INDEX

Certificate …………………… i

Acknowledgment …………………… ii

Abstract ...………………… iii

Table of contents …………………... iv

List of Figures …….……………....v

List of Tables …………………....vi

Abbreviations and Nomenclature …………………...vii

Chapter 1: Introduction ….…………………1

* 1. : History ……….……………1
  2. : Problem definition ....………………….3
  3. : Health hazards ...…………………..4
  4. :Scope and objectives ...…………………..6

Chapter 2: Literature Review ...…………………..7

Chapter 3: Industrial Visit for understanding the problem ...…………………..9

Chapter 4: Problem solution ...…………………..11

Chapter 5: Methodology ...…………………..13

5.1: Material requirement ...…………………..13

5.2: Metal joining process ...…………………..17

Chapter 6: Design & calculation ...…………………..18

6.1: Modeling ...…………………..18

6.2: Design ...…………………..18

6.3: Calculation ...…………………..20

6.3.1: Fan casing calculation ...…………………..20

6.3.2: Cyclone body calculation ...…………………..23

6.4: Fabrication ...…………………..26

Chapter 7: Cost estimation ...…………………..33

Chapter 8: Testing & Observation ...…………………..35

8.1: Testing ...…………………..35

8.2: Observation ...…………………..35

Chapter 9: Conclusion ...…………………..37

Future Scope ...…………………..38

References ...…………………..39

**List of Figures**

|  |  |  |
| --- | --- | --- |
| **Fig No.** | **Figure Name** | **Page No.** |
| 1. | Dust particle collected on machine | 3 |
| 2. | Group visit to pogul textile | 09 |
| 3. | Spinning of towels | 10 |
| 4. | Spinning machines | 10 |
| 5. | Exhaust fan | 13 |
| 6. | Cyclone body | 13 |
| 7. | Fan casing | 14 |
| 8. | Fan casing ring | 14 |
| 9. | Collection bucket | 14 |
| 10. | Supporting stand | 15 |
| 11. | Wooden plate | 15 |
| 12. | Nut & bolts | 15 |
| 13. | Washers | 15 |
| 14. | Groove flat lock seam joint | 17 |
| 15. | Autocad 3D line model of cyclone dust collector | 18 |
| 16. | Diagram of cyclone body | 18 |
| 17. | Diagram of fan casing | 19 |
| 18. | Schematic of cyclone body | 24 |
| 19. | Experimental setup of cyclone dust collector | 34 |

List of Tables

|  |  |  |
| --- | --- | --- |
| **Fig No.** | **Figure Name** | **Page No.** |
| 1. | List of material requirement | 16 |
| 2. | Table min/change | 20 |
| 3. | Prostatic pressure guideline | 21 |
| 4. | Process Sheet Part: 1 cyclone body | 27 |
| 5. | Process Sheet Part: 2 fan casing | 28 |
| 6. | Process Sheet Part: 3 fan ring | 29 |
| 7. | Process Sheet Part: 4 wooden plate | 30 |
| 8. | Process Sheet Part: 5 support stand | 31 |
| 9. | Cost estimation process sheet | 34 |
| 10. | Observation table | 35 |
| 11. | Comparison between | 36 |

Abbreviations and Nomenclature

ρp = Particle density, (kg/m3)

dp = Particle diameter, inches (μm)

vp = Particle tangential velocity (m/s)

r = Radius of the circular path, (m)

μ = Viscosity (Pa.s);

Bc = Inlet width (m)

N = Effective number of turns (5-10 for common cyclone)

vi = Inlet gas velocity (m/s)

ρp = Particle density (kg/m3);

ρ = Gas density (kg/m3)

As = Surface area of cyclone exposed to the spinning fluid For design purposes this can be taken as equal to the surface area of a cylinder with the same diameter as the cyclone and length equal to the total height of the cyclone

Dc= Diameter of the barrel

Lc= Height of the barrel

Zc = Height of the cone

Bc = Diameter of pipe

P1= Pressure at inlet of fan casing

P2= Pressure at outlet of fan casing

V1= Velocity at inlet of fan casing

V2= Velocity at outlet of fan casing

CFM = Cubic feet per minute (cu ft/min.)

Q= Discharge (m3/sec)

Z= Datum height