iJRASET
International Journal For Research in Applied Science and Engineering Technology



# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

**Volume:** 10 **Issue:** VII **Month of publication:** July 2022

**DOI:** https://doi.org/10.22214/ijraset.2022.45308

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 VII July 2022- Available at www.ijraset.com*

# Purification of Contaminated Air from the Spinning Mill and Transformation of Microdust as Flyash for Structural Filling

Fathima Fayiza Elachola[1], Prof. M. A. Chinnamma[2]
[1, 2]*M.tech Environmental Engineering, Department of civil Engineering, Malabar College of Engineering and Technology, Desamangalam, Trissur, 679532, kerala*

***Abstract:** This project describes the investigation from the co-operative spinning mill at pattarkadavu. During this process micro dust is deposited in the various filtering medias. Normally in this spinning mill they were incinerating these micro dusts and these incinerated micro dust dumped into the landfills. The aim of my project is reduction of the landfill disposal of incinerated microDust and using the waste as structural filling.*
***Keywords:** microdust, relative humidity, incineration, air treatment,*

## I. INTRODUCTION

The Malappuram Co-Operative Spinning Mills Limited was established in the year 1979 and started commercial production in 1980. There are almost 6 set of air purification plants inside the spinning mill for that the hot air from the unit circulating inside the unit and mixing with fresh air by diffusers. These microdust is the combined waste of polyster and cotton so it hasn't any properties of biodegradable waste more over polyster is a petroleum by product. Analysing the overall manufacturing process of co operative spinning mill for the production of yarn. Find out the methods to Reduce micro dust formation inside the spinning mill. Analyse air treatment process inside the manufacturing unit. Reusing of incinerated micro dust and make it as environmental friendly. To find out if micro dust can be used for structural filling as fly ash. It helps to analyze the different method of air treatment process. Aitreatment effluent dumping can btransformed as environmentally safe. Incinerated microdust reusing might be decrease soil pollution and other environmental pollution. Incinerated microdust has the properties of fly ash which is used for structural filling is a goo disposal method. Helps to suggest new method of disposal of microdust as structural filling. We know that 5500kg of yarn production causes very large quantities of micro dust so through incineration we can reduce its volume. After volume reduction dumping of incinerated microdust causes environmental pollution. We can reduce this pollutions by the reusing of incinerated microdust as fly ash. Beacause flyash has so many uses like structural filling. By analysing the properties we can use microdust as structural fill.

## II. METHODOLOGY

Physical Characteristics :The combined use of quarry rock dust and fly ash exhibited excellent performance due to efficient microfilling ability and pozzolanic activity. Quarry dust qualifies itself as suitable substitute for river sand. It is advisable to carry out trial casting with quarry sand proposed to be used. Chemical Characteristics :-Fly ash is produced by burning coal in coal combustion boilers. Fly ash has been used in roadways and interstate highways since the 1950s. It can be effectively utilized in agriculture sector for improving the properties of problem soil, improve the nutrient availability of degraded and nutrient deprived soil. Biological Characteristics :-Fly ash is waste from coal-fired power plants. Researchers at Washington State University in the U.S. have developed a new form of concrete that uses fly ash as a binder. The material is pervious so that water can pass through it and recharge groundwater sources. Fly ash can be used as a borrow material to construct fills and embankments. When fly ash is compacted in lifts, a structural fill is constructed that is capable ofsupporting buildings or other structures. Fly ash offers advantages over soil and rock when used in structural fills and embankments. Interest in man-made fiber is rapidly springing up in terms of research and applications. Man-made fibers are used to produce athletic clothing, tights,undergarments, cotton-
The ideal blend is one in which the fibers of the components are mixed to give a uniform texture, appearance and handle.
The degree of uniformity is largely dependent on the care taken in building the sandwich. Three types of irregular blending can be distinguished:. Variation along the yarn, in proportion of different fibers in each cross-section, or variation, along the material's surface.

©IJRASET: All Rights are Reserved 

1) Step 1: Blow room process
2) Step 2: Carding
3) Step 3: Combining
4) Step 4: Drawing
5) Step 5: Roving
6) Step 6: Cone winding

Textile industry is plagued by air pollution problems which must be resolved. Air emissions include dust, oil mists, acid vapours, odours and exhausts. Textile industry one of the major sources in the increase of air pollution globally in general or in developing countries in particular.

## III. CONCLUSIONS

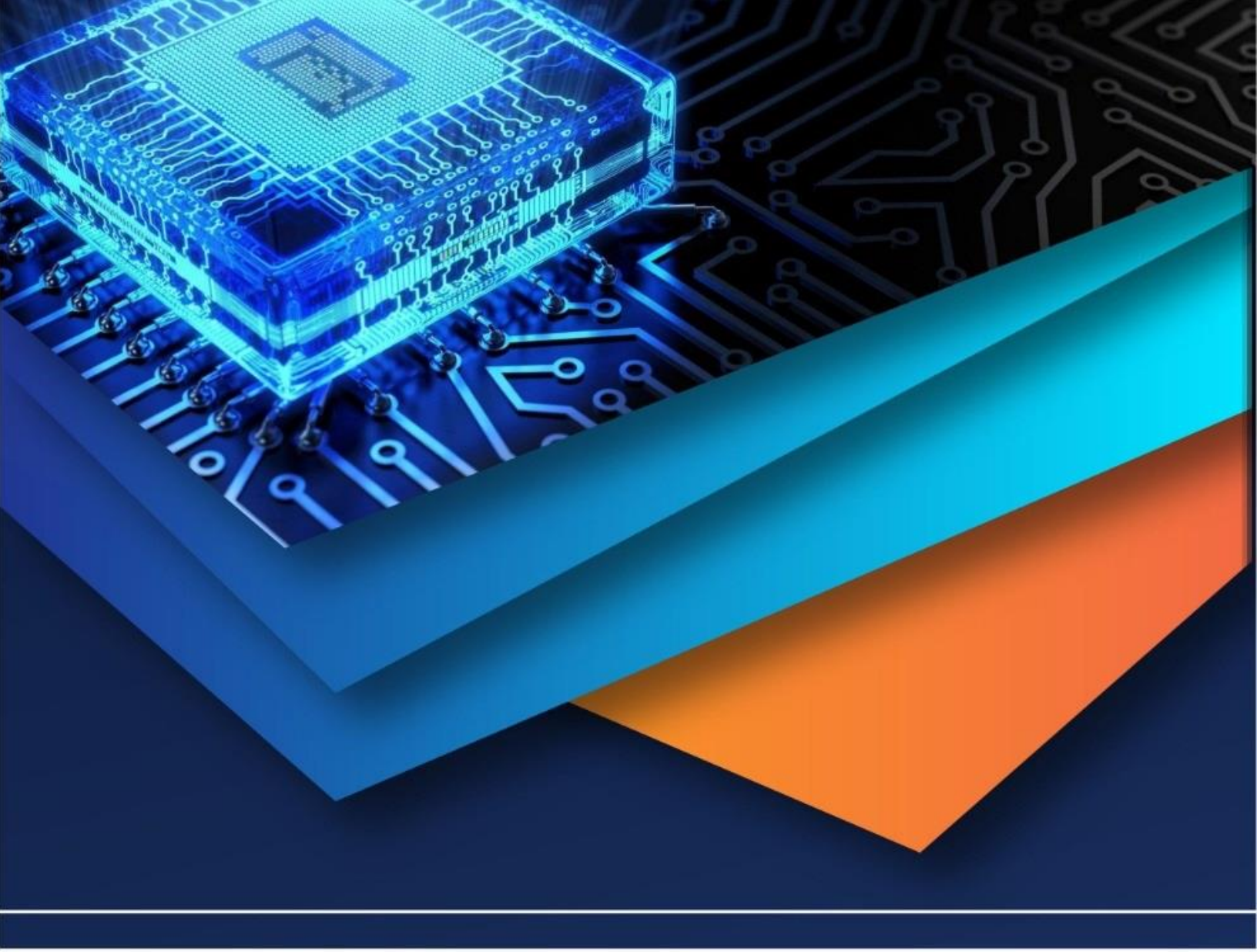
In the spinning mill 5500 kg of yarn production per day causes formation of 10 to 20 kg of microdust. The incineration process of mcrodust might reduce the volume as 70 percent. purification of contaminated air helps to maintain proper humidity like 55 to 60percentage.

## IV. ACKNOWLEDGMENT

I thank ALMIGHTY OF GOD, who laid the foundation for knowledge and wisdom and has always been the source of my strength, inspiration and who guides me throughout. I express my sincere thanks to Dr. P BABU, Principal, for permitting me to present this Project work and providing me with all the facilities for the successful full the main completion of the same..I express my deep sense of gratitude to professor Anil Kumar. B, Head of the department of civil engineering for providing me the best facilities and atmosphere for creative work guidance and encouragement. I would like to thank my guide, Professor M A CHINNAMMMA, M Tech coordinator, Department of civil engineering, for guiding and giving timely advice and suggestions in the successful completion of the Project. Finally, I would like to convey my sincere thanks to all the faculty members of the Civil Engineering Department for their cooperation. I am indebted to my parents and all my friends for their constant encouragement..

## REFERENCES

[1] E. E. Berry, R. R. Hemminge, W. S. Longlay, and C. G. Carette, “Beneficiated fly ash hydration, micro structure and strength development in Portland system,” in Proceedings of the 3rd International Congress Fly Ash, Silica Fume, Slag and NationalPozzolana in Concrete,
[2] K. Ganesh Babu and G. Siva Nageswara Rao, “Efficiency of fly ash in concrete with age,” Cement and Concrete Research, vol.26, no. 3, pp. 465–474, 1996.
[3] M. Galetakis and S. Raka, “Utilization of limestone dust for artificial stone production: an experimental approach,” MineralsEngineering, vol. 17, no. 2, pp. 355–357, 2004.
[4] M. Safiuddin, M. F. M. Zain, M. F. Mahmud, and R. S. Naidu, “Effect of quarry dust and mineral admixtures on the strength and elasticity of concrete,” in Proceedings of the Conference onConstruction Technology, pp. 68–80, Kota Kinabalu, Malaysia,2001.
[5] C. F. Goble and M. D. Cohen, “Influence of aggregate surface area on mechanical properties of mortar,” ACI Materials Jour-nal, vol. 96, no. 6, pp. 657–662, 1999.
[6] L. Baali, A. Naceri, and R. Mehamed, “Mechanical response ofmortar made with natural and artificial fine aggregates,” Asian Journal of Civil Engineering (Building and Housing), vol. 9, pp.85–92, 2007.
[7] 18. Schoeman JL, van Deventer PW. (2004). Soils and the environment: the past 25 years. S Afr J Plant Soil. 21(5):369-387.
[8] 19. Schutter ME, Fuhrmann JJ. (2001). Soil microbial community responses to flyash amendment as revealed by analyses of whole soils and bacterial isolates. Soil Biol Biochem. 33:47-58.
[9] 20. Sikka R, Kansal BD. (1995). Effect of fly-ash application on yield and nutrient composition of rice, wheat and available nutrient status of soils. Bioresour. Technol. 51:199-203.



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)