

Using Multi Walled Nanotube for Preventing the Harmful Gases Exiting to the Atmosphere

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Abstract— In this paper the main focusing view is how to safe our environment from fossil fuel gases which is non-renewable and affecting the atmosphere. Flue gas is the gas exiting to the atmosphere via a flue, which is a pipe or channel for conveying exhaust gases from a fireplace, oven, furnace, boiler or steam generator. Quite often, the flue gas refers to the combustion exhaust gas produced at power plants. Its composition depends on what is being burned, but it will usually consist of mostly nitrogen derived from the combustion air, carbon dioxide (co₂), and contains a valuable percentage of a number of pollutants, such as carbon monoxide, nitrogen oxides, and sulfur oxides. To reducing the fuel gases amount in the atmosphere we using the MWNT (multi walled carbon nano-tube) sheet as a filter at the top of the chimney cause reduced pollutant gas exiting to the atmosphere. It is a nano technology which had remarkable features, also quit innovating structure.

Key words: Multi Walled Nanotube, Harmful Gases

I. INTRODUCTION

The thermal power plant is broadly using the furnace to burns fossil fuel such as coal, natural gas or petroleum to produce electricity. Central station fossil-fuel power plants are designed on a large scale for continuous operation. In many countries, such plants provide most of the electrical energy used. Fossil-fuel power stations have machinery to convert the heat energy of combustion into mechanical energy, which then operates an electrical generator. The prime mover may be a steam turbine, agas turbine or, in small plants, a reciprocating internal combustion engine. All plants use the energy extracted from expanding gas, either steam or combustion gases. Here the functioning figure of thermal power plant

The main work is done in to the furnace .because its hold masses of exhaust which is hazardous to atmosphere. In this we are implementing MWNT at the top of the furnace which is filtering the air exit to atmosphere. At power station furnace have lots of heating capacity it is working on very high temperature that way as an air filter we are using MWNT because it is a strong and lightweight substance manufactured from compressed carbon nanotubes, which are long, cylindrical carbon structures or plane sheet structure consisting of hexagonal graphite molecules attached at the edges. A sheet of MWNT looks like old-fashioned typewriter carbon paper but is much stronger than an equivalent mass of steel. When sheets of MWNT are stacked and compressed, the resulting material is up to 500 times stronger than steel, at one-tenth of the weight, the distance between layers is approximately the same distance between layers of graphite (0.142 nm). And it also carries high temperature stability.

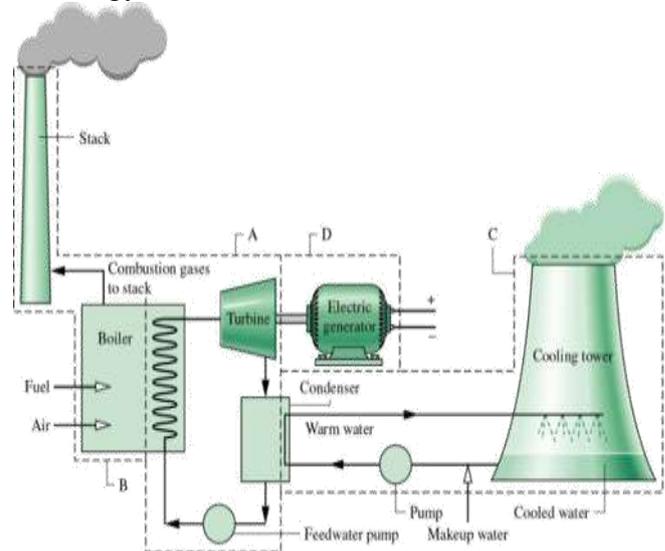


Fig. 1: Thermal Power Plant

II. FABRIC SPECIFICATION

Aerosol filters is made with conventional micro-fiber fabrics they are designed to efficiently capture small particles from the air. Filters constructed of nano-fiber fabric structures provide greater filtration efficiency than conventional micro-fiber fabrics due to their higher surface area and smaller size. Carbon nanotubes are very small diameter fibers that have the potential to be integrated into filters to further increase particle capture efficiency. The filtration performance of the new filters showed that when the number of CNTs layers increased, the filtration efficiency increased dramatically while the pressure drop also increased. In order to meet high efficiency particulate air filter requirements with a reasonable pressure drop, CNTs were laid in a cross-ply structure within the filter. The results demonstrated that the three layer cross-ply structure provided 99.98% filtration efficiency. Moreover if we talk about the temperature the aerosol temperature range is 295°–410°k and the aerosol particle number density range is 140 cm⁻³ to 515 cm⁻³.

III. WORKING DIAGRAM

In this diagram the top part of the furnace is considered where with the help of aerosol filter, we are extracting the gases from air which is free from pulverized coal and other tiny particle and gaseous air is in between the layers after that passing through the outlet a reduced amount of normal air. When smoke will come out from smoke assembly chamber then they had very large amount of fuel gases and small particle like carbon monoxide, nitrogen oxides, and sulfur oxides also they have carbon dioxide and large amount of nitrogen . The gases how is coming from the

smoke. it's harmful for the atmosphere. For preventing this using an aerosol filter for as shown in figure,

[4] www.wikipedia.com

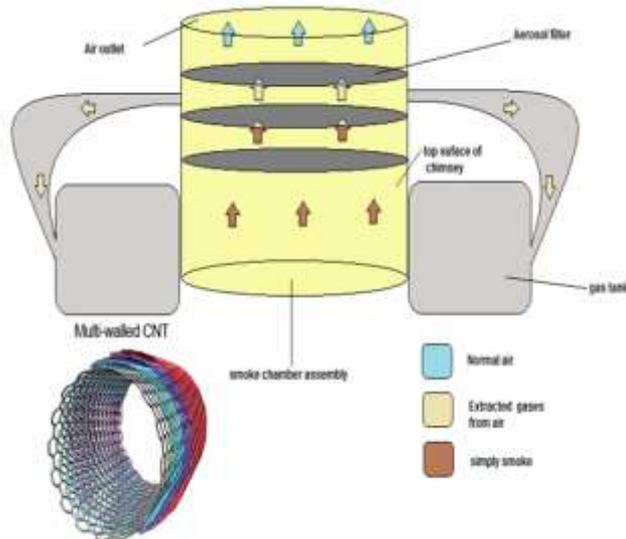


Fig. 2: Aerosol Filter

The small particle will drop inward using aerosol filter the filter will not contain any kind of particle. Now here the extracted gas is collected in to the condense chamber through pipes and after that the collected gas are going to supplies to the respective organizations for such works implementing like medical and medicine preparation, chemical factories preparing a chemical etc. here the motive to collected the exhaust for making environment free from poisonous gases. The filter which is used in this is non-sticky there is no any kind of material will stick in this, also the pulverized coal is not going to stick on the filter

IV. CONCLUSION

Basically this idea is comes from car cylinder filter. designing this technology is very important for us because maximum power is generated through thermal power plant in that is also a main cause of global warming, excluding at this instant of life electricity is most important thing for us and we also can't neglect the cause that way we implemented the MWNT aerosol filter on smoke chimney, in commercial and business purpose this product is gives revolution as present as well as future expectation. This is the technology on which deals with nanometer and provide high scale of reliability. And also helps to increasing the scale of production.

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