

AIR POLLUTION CONTROL AT MYSORE PAPER MILLS

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ABSTRACT

This Paper deals with the Air pollution Control measures adopted by Mysore Paper Mills. Various departments like Coal fired boilers, Coal handling plant, Chemical recovery boiler, Lime Kiln, Hypo and Causticizing Plant, Chipper complex, Chemical Pulp plant and Sugar Mills are the main sources of air pollution. Our future plans to further control the air pollution are also discussed.

Mysore paper Mills Limited is a composite fully integrated paper mill which has expanded four fold in capacity during the last 6 years comprising of 30,--- TPA capacity cultural mill going into a final 37,000 TPA capacity and 75,000 TPA capacity Newsprint. Besides a new 2500 TPD cane crushing capacity Sugar Mill has also been integrated into the paper complex. It is situated at Bhadravati an industrial town of Karnataka by the side of Bhadra river. The mill complex has got a power block consisting of 3 Nos. coal fired boilers generating 180 T/hr steam, two turbines each of 12.5 MW and a Chemical recovery boiler with 270 TPD solid burning capacity a 100 TPD shaft lime kiln a hypo-chlorite plant of 50 TPD chlorite as utilities. Besides a chipper complex of 750 TPD of chips is also installed.

We have indentified the following departments of our mills as the main contributors to the air pollution.

1. Battery of 3 Nos. coal fired boilers.
2. Coal handling plant.
3. Chemical recovery boiler.
4. Lime Kiln.
5. Hypo and Causticizing Plant.
6. Chipper complex.
7. Chemical Pulp plant.
8. Sugar Plant.

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In all the above areas strict air pollution control measures as per the standards laid down by the pollution control board are being incorporated.

Coal fired boilers are one of the main sources of air pollution. Each of the three coal fired boilers is having the capacity to produce 60 T/hr of steam at 63 Kg/cm². At present about 15 T/hr coal is being fired in each of these boilers. Coal received by the mill is of mixed variety with 25 % to 40 % ash and 15 % to 20 % fines i.e. below 3mm size. Flue gas quantity of 1,49,000 M³/hr/ boiler with dust concentration of 7,300 Mg/NM³ is treated in the mechanical dust separator before being let into the atmosphere at an altitude of about 40 mts above the ground level through the tall chimneys. These chimneys apart from creating necessary draft for combustion, it also helps to let out the flue gasses into the atmosphere at high altitude so that the dust particles and the harmful gasses are distributed over a very large area. The dust concentration in the flue gas is reduced to 3400 Mg/NM³ after the dust separation in the mechanical dust separator.

It is envisaged to install more technologically advanced systems like high efficiency cyclone or bag filters for the following advantages.

1. Bringing further down the suspended particulate matter substantially.
2. Obtaining fly ash as a saleable product as it is finding use in cement and brick industries.

A flue gas analyser is installed at the Chimney to monitor the carbon di-oxide passing into the atmosphere. Apart from this the main ash produced in the boilers is taken out by water submerged ash conveyor so that there won't be any dust at that location.

Coal handling plant which is having a capacity to stack about 30,000 T of coal and crush 100 T/hr of coal is situated at the far end of the mill with water sprinkler arrangements, so that much of coal dust which may be generated is controlled. We are also planning to make use of the coal dust separately along with the wood dust, effluent cake and bagasse pith to be produced from expansion of the

sugar mill in a fluidised bed multifuel boiler. A condensing type turbo generator will be installed to generate additional power using this steam. This will be useful as a supplementary power source in view of the chronic power shortage in Karnataka.

The chemical recovery boiler of 270 TPD solids burning capacity can produce 33 T/hr of steam at 63 kg/cm² pressure. By firing at 15M³/hr black liquor of 65 % solids, this boiler produces about 139000 M³/hr of flue gasses. The flue gasses which may carry the chemicals particularly sodium sulphate is passed through electro static precipitator with two chambers in parallel. The solid particles are collected in the precipitator after which the flue gasses are let out through a tall chimney of 45 mts height. The electro static precipitator serve not only in improving recovery of the chemicals an economic necessity, but also to free the flue gases from chemicals before it is let out into the atmosphere. The recovery dissolver stack mission is minimised by a screen and water spray across the fumes passage in the stack.

The lime sludge and hypo mud which are the waste products produced in the causticizing and hypo plant are at present used as land filling at 50 % consistancy and create some dust problems. Studies are under way to reuse the lime sludge by installing a recalcination plant to recover burnt lime, thereby also reducing air pollution. In order to avoid chlorine contamination in the air when chlorine cylinders are used in the hypo plant, any leaking chlorine cylinder is to be pushed into a pond of milk of lime solution so that the leaking chlorine gas reacts with the milk of lime without creating air pollution hazard.

The gaseous emission of organic sulphur components like mercaptans and H₂S from chemical pulping is another area of air pollution. Below heat recovery system is employed in the chemical pulping plant.

The bagasse left out after the sugar cane crushing is conveyed to depithers and while the depithed bagasse is taken for wet bulk storage and used for pulp mill, the pith produced is pneumatically conveyed to the boilers to be burnt along with coal saving coal requirement and avoiding thereby the air pollution. This will also enable the ecological balance to be maintained by reducing the quantum of forest

raw material required for the pulp mill, thus preserving the already scarce forest cover in the country. The above scheme will be completed by September 1987. At present the bagasse is stacked after bailing to reduce the pollution problem.

Besides the above, it is to be noted that most of the air pollution sources like lime kiln, coal handling plant, hypo, causticizing, chipper complex and sugar mill located in such a way that any unavoidable short time pollution emissions from these sources does not spread to the populated areas of the township. We are developing eucalyptus forestry in our township, around Bhadravati. In Shimoga district alone we are implementing a plantation programme for pulpable woods covering an extent of about 30,000 hectares of which we have already completed a plantation of about 14,000 hectares, in a phased manner during the last four years. It will give a substantive yield of about 40T/hectare every 7 years on rotation although $12\frac{1}{2}$ % of this yield along with the lobs and tops of the trees will have to be given to the government as per the lease agreement for distribution to the poorer sections as fire wood. The remaining 87.5 % of the eucalyptus wood will serve as a basic raw material for our Newsprint production. Since mainly barren lands of C, D & E type are selected for the plantation these lands are converted to beautiful greenery because of which our plantation apart from being a source of our basic raw material from 1991, serves also to control air pollution. The programme serves preservation of forestry psychological balance without destroying the existing forests, converting barren land to greenery also helps soil conservation. The tall greenery not only purifies the atmosphere but also serves as screen for collection of any dust particles.

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