



## ASH MANAGEMENT IN ESKOM

Eskom's coal-fired power stations consume approximately 109 million tons of coal per annum, producing 25 million tons of ash, to supply the bulk of South Africa's electricity.

A modern coal fired power station with a total output of 3600MW will consume  $\pm 50\,000$  tons of coal every day. Depending on the coal quality, the calorific value (heat content) and ash content, stations can produce  $\pm 20\,000$  tons of ash per day.

### From Coal to Ash

Almost 85% of the ash produced in the generation process is called fly ash or pulverised fuel ash. The reason for this is that the coal is pulverised into a very fine dust (rather like cake flour) before being fed into the boilers to ensure efficient combustion.

Larger particles of ash, called coarse ash, which make up the rest of the ash produced at the power station, drop down from the furnace and collect at the bottom in the ash hopper of the boiler.

The fly ash (also particulate matter) is removed from the flue gas stream (exhaust gases from the boiler) by means of electrostatic precipitators or bag filter systems. After being removed from the collecting hoppers, the fly ash and coarse ash is stacked on huge dumps or ash dams (slurry dams), the latter at older power stations. Flue Gas Conditioning (FGC) will be installed at Eskom's new built coal fired power station, Kusile. (later also at Medupi)

### Rehabilitation

Eskom is committed to integrated environmental management to conserve the country's heritage and resources. It is with this commitment in mind that all power stations have a program in place for the rehabilitation and revegetation of the ash disposal sites.

Rehabilitation involves the covering of the ash dumps with fertile soil and the planting of grass and trees. The areas are rehabilitated to the extent that it becomes a habitat for a variety of plant, animal and bird species. At some power stations, the ash is back-stacked onto the area from where the coal was mined (open cast mining). It is important to note that this area is filled up with spoils, overburden etc. before revegetation starts.

### Putting Ash to Use

Approximately 1.2 million tons of ash per year is sold to, amongst others, the cement industry where the ash is used as a cement extender. The ash consists of very fine, spherical particles and has an almost zero carbon content, high pozzolanic activity (or reactivity), and unusually high consistency. Fly ash is successfully used to enhance the quality and economy of concrete.

Uses of fly ash include brick making, dam building and as a cement extender during the manufacturing of cement. Approximately 250 000 tons of ash from Lethabo Power Station, for instance, was exported to Lesotho for the Katse Dam project.

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