

Komati Ash Dam Project



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What is an ash dam?

- An ash dam is basically a barrier constructed to contain the ash slurry. An ash dam is a place to safely store ash which as a by-product produced during the coal combustion process.



Ash dam showing ash mixed with water being pumped into the pond on top of the dam. The ash originates from the coal-burning power station nearby. The ash settles out and the water is recycled.

Hendrina Power Station

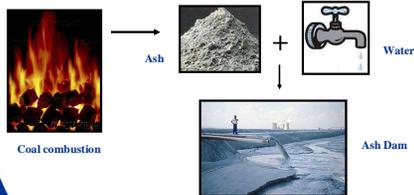
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What is ash and how is it produced?

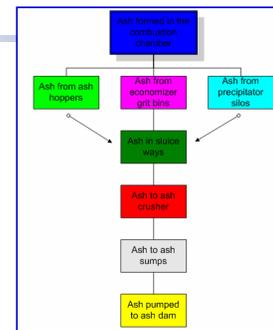
- Ash is an inherent constituent of coal, when the coal is burnt the residue that remains behind is called **ash**.
- Coal fed to the boilers is first pulverised into a fine dust, mixed with air and blown into the furnace where it ignites and burns, this ash needs to be removed to maintain the efficiency of the combustion process.
- There are 2 types of ash formed:
 - ❖ Coarse ash
 - ❖ Fly ash dust
- There are two ash collection points:
 - Course ash falls out of the draught to the bottom of the combustion chamber and into the ash hoppers.
 - The lighter fly ash is extracted from the boiler from the top and then fall into the precipitator ash hoppers.

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- The ash handling plant removes all these ash collections and it is then transported to the ash sumps using water where it is crushed before it is pumped to the ash dams in the form of a slurry (Water to ash mixture improves the flow properties of the ash.)



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Why does a power station need an ash dam?

- A power station needs an ash dam for the storage of ash produced after the coal combustion process.
- An ash removal plant is installed to extract ash from the boilers. It is important to remove this ash as it would collect in the furnace chamber and affect the process efficiency and foul the equipment.
- Accumulation of ash in the boiler can negatively impact on boiler operation or even shut down of the unit. Therefore a reliable system which can handle large quantities of ash removal and storage needs to be installed.
- Hence a designated storage area is required; historically at Komati this would be a wet ash dam.

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Ash slurry being pumped to the ash dam



Why a dam and not a dump?

- Komati makes use of the wet ashing system as opposed to the dry ashing process as per original design.
- Wet ashing produces less dust and uses more water, but this water is recovered and recycled on the plant making wet ashing the preferred choice for Komati. It is economical for Komati to continue with a wet ashing system.
- The costs to retrofit a dry ashing plant will be three times that of the wet ashing process.



What is causing Komati to build another ash dam?

- Eskom is currently re-commissioning Komati Power Station. The existing ash facilities do not have sufficient deposition capacity for ash disposal over the planned life of the station and a new facility is therefore required.
- The current ash dam has a storage capacity able to support the station for the next 18 months only, hence a new facility is required for the full station lifespan.
- After disposing of the ash for a specific period at one location, it gets filled up and then the disposal point has to be shifted to a new location. The old site is then rehabilitated by covering with a layer of earth and vegetation would be planted as part of the rehabilitation process.
- Rehabilitation of the ash dams at power stations is done on an ongoing basis on sections that will no longer be used for ashing.



The current ash dam area



A rehabilitated ash dam. Once the ash dam reaches a certain height level in height, then rehabilitation will be carried out by putting on a layer of top soil and sowing various grasses. In the foreground is the grassy plateau of a vegetated ash dam. In the background is the Hendrina Power Station.



Where would this ash dam be on the station property?

- The site is situated south of the power station and west of the existing ash dams. The property is owned by Eskom. The capacity of the site was not reported on, other than it is less than 13.5 Mm³. The ash dam is close to the power station ie within 3 km of the premises.



