



Case Study

Ash and Dust Disposal State-of-the-Art in NSW Power Stations

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This paper deals with ash and dust disposal in New South Wales power stations. It outlines the factors used in the selection of a suitable site for disposal of solid wastes from a coal fired power station. A number of different methods of handling the ash and dust from the collection hoppers in the power station to the disposal area are discussed. The potential of utilisation of these materials is very high and must be considered in the light of existing markets for building materials.

Coal fired power stations produce large quantities of noncombustible solid waste by-products of the combustion process which must be conveyed away from the power station site and disposed of in economically and environmentally acceptable areas.

Approximately 0.3 m³ of ash is produced from each tonne of coal burnt in New South Wales power stations. This means that up to 45 million m³ of ash will be produced from a power station of four 660 MW generating units over a nominal 20 years life. This ash is produced in several different forms:

Fly ash (also referred to as "dust") constitutes the major part of the total ash in coal, is a fine grain material similar in appearance to cement and is removed from the boiler flue gases in one of the various types of dust collecting plants.

Furnace ash is a heavier, larger material which falls into collection hoppers at the bottom of the boiler combustion chamber.

Economiser grits are medium size material which collects in hoppers located below the economiser at changes in direction of the flue gas path through the furnace.

Other solid waste by-products to be disposed of are:

Mill rejects are the materials not suitable for milling, discharged from the pulverising equipment into hoppers located adjacent to this equipment.

All these different waste materials must be collected and conveyed to disposal areas remote from the main plant.

This constitutes a large waste disposal problem and is a major consideration in the selection of a power station site. In recent projects undertaken by The Electricity Commission of New South Wales the provision of ash and dust handling plant and a suitable disposal area has cost in the order of 3% of the total capital cost of the power station.

In all recent projects hydraulic disposal of ash and dust has been used.

This paper generally outlines the factors used in selecting a suitable disposal site the methods of ash and dust handling used to convey the waste material to the disposal sites and the possibilities of utilisation of these waste products