

The Boilers

The electricity generated at the Power Station comes from a generator driven by a steam turbine. The steam is created in the drum of the boilers. Each boiler is a large chamber where coal is burned. The walls of each boiler are made up of many kilometres of steel tubes full of water. The burning coal reaches temperatures in excess of 500 degrees Celsius within the walls and heats the water in the tubes. The water rises through the tubes into the boiler drum, turning first into steam and then into superheated steam at 215 degrees Celsius.

The high temperature and pressure steam is fed into the multi-stage steam turbine. As the steam passes through each successive stage of the turbine both the temperature and pressure fall as the steam drives the turbine shaft round at 3,000 rpm.

The boilers are very big combustion chambers. Each is 50 metres high, weighs 1,800 tonnes and has 174 tonnes of water circulating through it. If you think something this large should be sitting on a very solid concrete foundation then you're in for a surprise. Each boiler is suspended from the roof of the power station. This is done because there's so much heat generated within that the whole boiler can expand by as much as 20 cm. It's a very efficient operation. The hot gases from the combustion chamber are used to dry the coal just before it enters the boiler. This allows the coal to burn more efficiently.