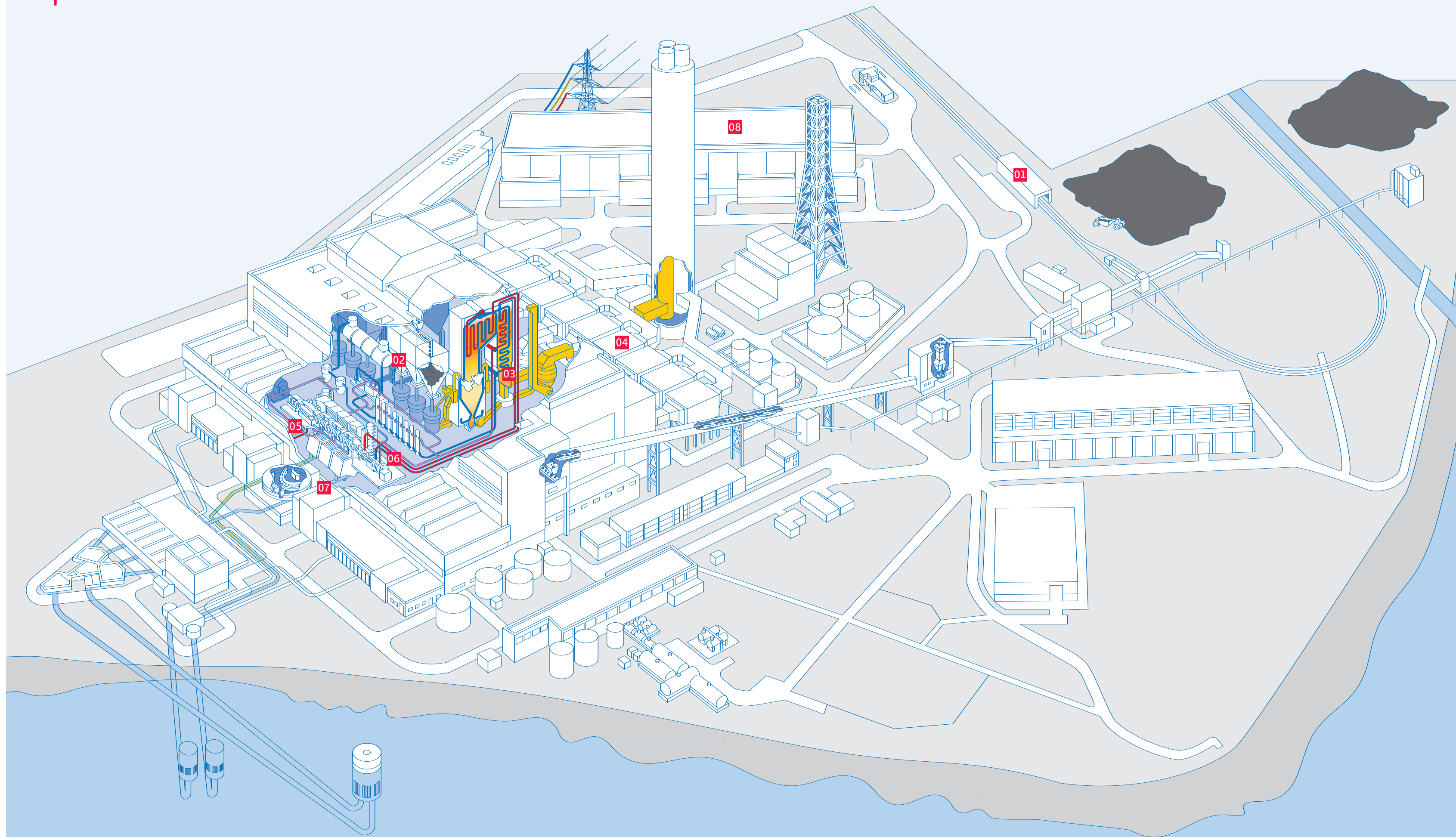


Aberthaw has three turbine generating units. Each unit consists of a boiler, supplying steam to a turbine, that powers an associated generator. In addition, the station has three gas turbine units for emergency use.



01 Coal supply

The station was designed to burn semi-anthracitic, low-volatile local coal. Coal is also delivered to the station by rail from the coal terminal at Bristol. It is unloaded and conveyed directly to the station or to the stockpile.

02 Pulverising mill

The coal is ground as fine as face powder in a pulverising mill, picked up by a powerful stream of hot air and blown into the boiler to burn like a gas.

03 Boiler

The heat produced converts water into steam in the tubes that line the boiler. For greater efficiency the steam passes through the boiler twice. When it leaves the boiler, the steam is at 165 times atmospheric pressure and a temperature of 565°C.

04 Electrostatic precipitator

Fine dust, produced by burning pulverised coal, is removed from the boiler gases by equipment called electrostatic precipitators, before passing up the chimney. Coarser ash falls to the bottom of the boiler and is piped to settling pits. The ash and dust is sold for construction purposes and civil engineering projects. Some of the fine ash is disposed of at our on-site facility.

05 Turbine

The steam from the boiler passes through the blades of the turbine's high pressure stage, turning the blades and turbine shaft at 3000 revolutions per minute. The turbine shaft is linked to the generator. The steam returns to the boiler for reheating and then goes back to the turbine's intermediate pressure stage and three low pressure stages.

06 Generator

Inside the generator, the rotor – an electromagnet – turns inside the stator (made up of copper bars) and creates an electric current. Each turbine generator has an output of 500MW of electricity.

07 Condenser

The spent steam from the turbine exhaust goes to the condenser, where it is turned back into water by passing over tubes containing cold water drawn from the Bristol Channel. The condensate is pumped back to the boiler for re-use and the cooling water returned to the sea. Further cooling water is drawn from the sea for use in the condenser when required.

08 Generator transformer

Electricity from the generator is produced at a voltage of 22,000 volts. For transmission along the National Grid system, the voltage is increased to 275,000 volts in the generator transformer.