Dry Cooling Technology

Switch ON your knowledge

Discover the technology that saves water in power stations

As you know by now, there are many different sources of electricity and many different ways electricity can be produced, but the process always involves converting energy from one form to another. A power station can therefore be considered as an energy converter.

Know the lingo!

- A **Watt** is a unit of power that measures the rate of energy conversion
- A **Megawatt** is the standard unit of measurement for bulk electricity.

One megawatt = 1 000 kilowatt and one kilowatt = 1 000 watts

One of the by-products (unwanted extras) of this procedure is heat, so to prevent 'waste' heat from escaping, most power plants use cooling towers. Once steam has passed through a turbine, it needs to be cooled. Dry cooling systems use air instead of water to cool the steam, thus saving up to 90% of water in the process.

Wet cooling vs. dry cooling

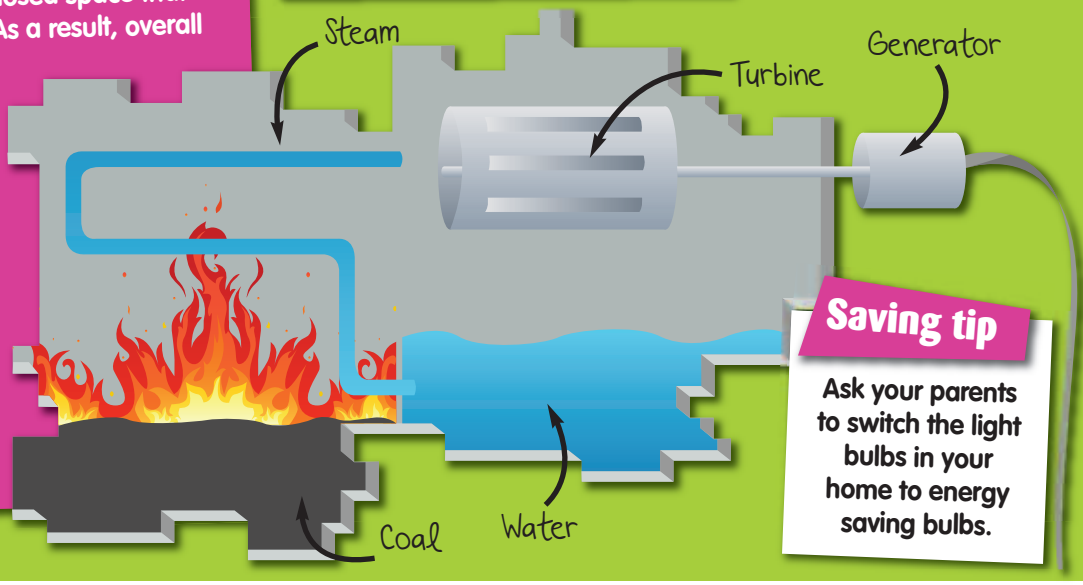
Wet cooling power stations use a re-circulating system that cools via evaporation in an open cooling tower. Approximately 85% of the total water supplied to a power station evaporates through these open cooling towers.

Dry cooling takes place in an enclosed space that prevents water from evaporating. As a result, overall power station water use is approximately 15 times lower than a conventional wet-cooled power station. For this reason, Eskom has implemented dry-cooling technology on power stations wherever possible, despite the fact that capital cost of wet systems is high, while operating cost is low and capital cost of dry systems is low, while operating cost is higher.

Matimba leads the way

Matimba Power Station in Limpopo is the largest direct dry-cooling power station in the world and can produce more than 4 000 Megawatts of electricity at any given time. It makes use of closed-circuit cooling technology – similar to the radiator and fan system used in your daddy's car – which only needs 0.1 litres of water per kilowatt of electricity, compared to the 1.9 litres on average used by wet-cooled stations. The choice of dry-cooled technology for Matimba was largely influenced by the scarcity of water in the area.

Dry cooling process:



Saving tip

Ask your parents to switch the light bulbs in your home to energy saving bulbs.

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