

Desalination

Switch **ON** your  knowledge

Can we use recycled water in a power plant?

Now that we have learnt what dry-cooling is and how it benefits the water cycle, it's time to look at ways in which Eskom is helping conserve water by limiting the discharge of wastewater into other water resources, when wet cooling is the only option.

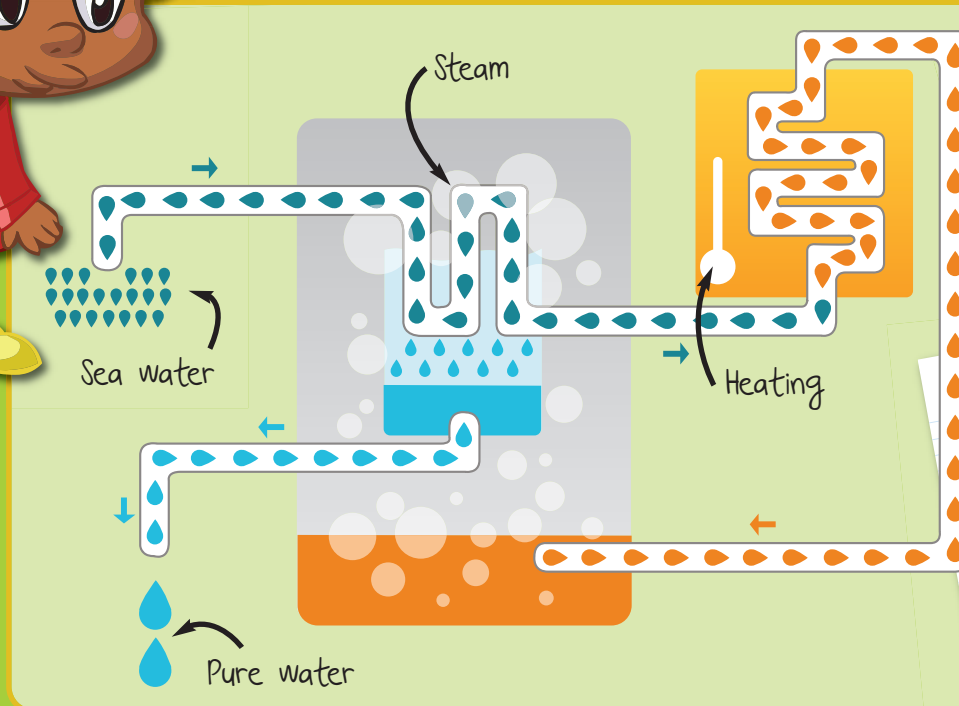
Where the design of a wet-cooled power station allows it, Eskom has recommended a policy of zero liquid effluent discharge, which includes a desalination process. What this means is that dissolved solids (mainly salts) are removed from waste water using reverse osmosis (the moving of water across a tiny membrane filter, almost like when you use a sieve for baking at home) until all pollutants are finally captured in ash dams. In doing this, the maximum amount of waste is removed using the smallest possible volume of water. It also means that less water is evaporated, which in turn enhances the performance and reduces power consumption of the power plant.

Real life examples

The mines that supply coal to Eskom's power stations produce significant volumes of wastewater, but Eskom makes use of an eco-friendly solution, since it accepts this water from the mines associated with two power stations, Lethabo and Tutuka, built in 1985. Through the introduction of desalination plants here, polluted mine-water can be used as a water source. This means that wastewater from the mines is recycled and used in the power plants. This lowers negative environmental impacts on the surface and ground waters of the country.

Costly business

Desalination processes are relatively expensive. The total cost for both the treatment plants was about US\$ 7 million (roughly R 14 million, at that time). The operational cost is also very high, which makes installing this technology even more expensive. However, the impact on the environment is tremendous, as both desalination plants use spiral wound reverse osmosis membranes, which can recycle more than 80% wastewater. The benefit is that Eskom needs to use less clean water for the two stations, saving about 5.16 million cubic meters of water a year!



Desalination process

Did you know?

Desalination is not only used in filtering the water used in power stations, but can also turn seawater into fresh water?



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