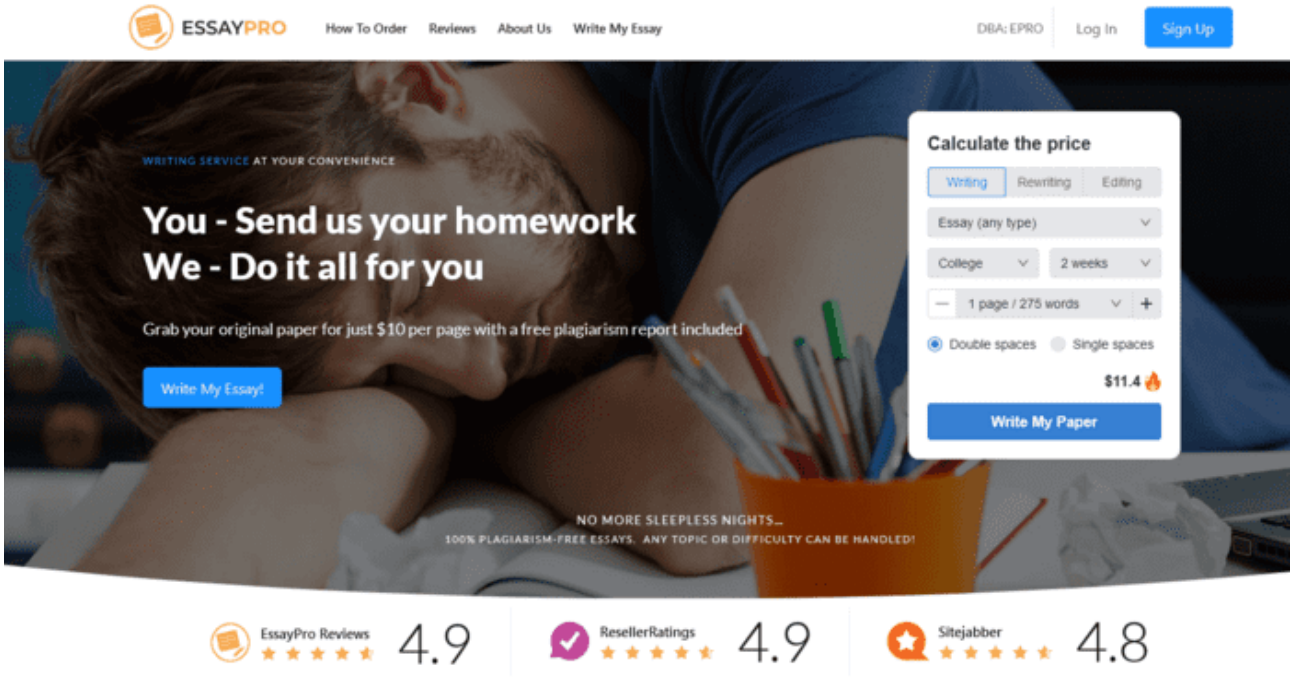
Water Requirements of Power Plants



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Thermal generating plants are faced with several challenges as regards finding efficient ways of reducing the amounts of carbon dioxide they emit into the atmosphere. To find an effective way of managing the emission of the greenhouse gases, a number of companies are now adopting the post-combustion carbon capture and storage (CCS) technique; as much as it reduces carbon dioxide emissions, the method is associated with several negative environmental impacts. The CCS system requires large volumes water, which is withdrawn from and returned to its sources, which include oceans, seas, lakes, and rivers; the toxins and high temperatures harm the aquatic life in the water sources.

Water use in power-generating plants is usually expressed in two components: withdrawal and consumption. Withdrawal refers to taking away water from local sources for use in a power factory. Depending on the systems used in the plant, the withdrawn water may be returned to its source and made available for use in other areas; however, in some cases, the water cannot be recycled. Consumption refers to the water removed from its source for use in a power plant, which cannot be recycled, as it is lost through evaporation (Martin 21).

The water that is withdrawn from the source never returns in its original state. In addition, in most cases, only a small volume of it returns to the source. This is a major challenge in areas where the source not only serves the power plant, but also numerous people and

animals, as the water gets depleted faster (Rogriguez, Delgado, Delaquil, and Sohns 13). The situation gets even worse when the water is consumed by the plant without returning to its source. Such a situation leads to a significant reduction in the water levels of ...

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