

A Case Study: The Economic Outlook of Desalination Plants in Saudi Arabia

Authors : Ahmed Alghamdi

Abstract : Pure and safe drinking water is one of the fundamental needs of human being. Sea water desalination is considered as a feasible method for producing safe and clean drinking water all over the world. The Kingdom of Saudi Arabia (KSA) is the largest producer of desalinated drinking water in the world. Almost 50% of the need of drinking water in KSA is satisfied by the supply of desalinated water to various locations of the country. There are 27 desalination plants functioning across 17 locations in KSA and out of these plants, 21 are located on the coast of Red-Sea. Majority of these plants use multi stage flash distillation (MSF) technology to produce drinking water. In the current study, 3 major desalination plants in KSA, which operate on MSF technology, are compared in terms of their monetary expenses for a period of 5 years starting from year 2019. These expenses include their operation costs, maintenance cost and the total administrative costs. The analysis indicate that fuel cost, which is part of the operation cost, contributes to almost 70 to 80% of the total operation cost. At present, diesel, bunker fuel and natural gas are used for fueling up the MSF plants. Considering the nonrenewable nature of these fossil fuels and the fluctuations in the oil prices in recent years, it is highly recommended to switch over to renewable energy sources as fuel for sea water desalination.

Keywords : cost analysis, desalination, multi stage flash distillation, renewable energy

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