

## Desalination Technologies and Desalination Integrated with Renewable Energies - A Case Study

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**Abstract :** As water resources are rapidly getting diminished, more and more interest is paid to the desalination of saline waters. Desalination has become a reliable and cost effective solution in provision of fresh water particularly in the arid areas of the world such as Middle East countries. However, the dramatic increase of utilizing desalination will cause a series of problems which are significantly related to energy consumption and environment impacts. The use of renewable energy sources to provide energy required by desalination processes is a feasible and simultaneously environmental friendly solution. In this study an attempt has been made to present a review on desalination technologies, desalination integrated with renewable energies, in brief, and practical progresses made during recent years particularly in the field of desalination by wind energy which is the most common form of renewable energies. Moreover, an economic analysis of a wind powered RO desalination system comprising of 10×2.5 MW wind turbines is done, and the results will be compared to those of a cogeneration system comprising of one 25 MW gas turbines, heat recovery steam generators (HRSG) and MED-TVC desalination.

**Keywords :** wind turbine, desalination, RO, MED, cogeneration, gas turbine, HRSG

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