Establishing wind farm for desalting sea water to produce hydrogen

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Abstract

Hydrogen is one of the cleanest energy carrier that is one of the future fuel. This study proposes to establish a wind-powered hydrogen production by desalting sea water nearby the coastal areas. For this purpose 7 coastal cities in southern and northern of Iran were investigated. Weibull distribution function (WDF) was used for evaluating the available amount of wind energy potential in under study cities. Results of the calculations showed that the city of Anzali has a yearly mean of wind power density of $327 w/m^2$ which is highest between the other places. By using a 900 kW wind turbine the value of 2315 MWh energy will be produced, which this amount of energy will desalt 439950 m^3 of sea water or 35974 kg of hydrogen a year. According to the numbers of personal vehicles in the city, a wind farm containing 55 wind turbines (900kW) is needed to fuel all the cars and reduce the pollutant gases.

Keywords
Hydrogen, Desalting sea water, Wind farm, Coastal cities, Weibull distribution function

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