INVESTIGATION OF THE WIND ENERGY POTENTIAL OF GALLIPOLI PENINSULA

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Introduction

Growing world population and also environmental concerns have led researchers and designers to utilize clean and sustainable energies [1]. Wind energy is a renewable and clean energy resource. Since the installation cost of wind energy projects is higher than other renewable energy sources, it is necessary to take long term wind potential data and analyze these data before installation.

The necessary analyses during the installation of wind energy applications are generally carried out using statistical approaches. Rayleigh and Weibull distributions are the most commonly used methods [2-3]. There are lots of studies are available in the literature which investigated the potential of wind energy in different zones [4-7]. In addition to statistical methods, machine learning approaches are widely utilized in researches on wind energy [8-10]. These applications are also widely used for the determining wind energy potential as well as for wind energy forecasts [11-12]. In this study, wind energy potential for Gallipoli peninsula has been investigated. Two similar wind turbines with same power manufactured by two different company have been used in the analysis. The wind turbines selected in this study have been analyzed for 40 m and 60 m hub heights. In addition,

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Conclusion

In this study, wind energy potential for Gallipoli Peninsula in Turkey which is an important zone in terms of wind energy potential has been analyzed by statistical approach. According to the analysis results, the second measurement station showed the highest power and energy values. It can be stated that off-shore wind turbine installation in the region will have higher energy generation potential. This study also indicates the significance of on-shore and off-shore wind energy analysis. However, investment cost is an important issue and economic analysis should be done to evaluate wind turbines. Therefore, further studies may include a detailed economic analysis.

Keywords: Gallipoli Peninsula, wind energy, renewable energy.

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