Abstract

Our study focuses on the assessment of wind resources of three coastal sites, open to the Mediterranean Sea in north Algeria (Annaba, Oran and Bejaia). The hourly data used in this study span a period of 10 years. The parameters considered are the speed and direction of wind. For this purpose, the most energetic and frequent speed as well as the Weibull parameters were evaluated to plot the wind rose. In order to estimate the noise annoyance, a small 30 kW wind turbine was used to produce energy. Then, its noise was calculated and then modeled. The results obtained from the three sites gave annual mean speeds around 4 m/s as the west and north sectors are dominant, with an estimated noise level around 45 dB at a distance of 60 m from the wind turbine. Calculation of the energy produced showed that the optimal energy can only be produced by small wind turbines. Among the considered sites, Oran was found to be the best in terms of energy (63.83 GWh/wind turbine), with a capacity factor of around 24%.
Index Terms

Computer Science  
Power Systems
Keywords
Weibull parameters  wind rose  extracted energy  wind power  noise  Algerian coast