Assessment of annual wind energy potential for three selected sites in Iraq has been analyzed in the present work. The wind velocities data from August 2014 to July 2015 were collected from the website of Weather Underground Organization (WUO) at stations elevation (35m, 32m, and 17m) for Baghdad, Najaf, and Kut Al-Hai respectively. Extrapolation of stations elevation and wind velocities was used to estimate wind velocities at (60m, 90m, and 120m). The objectives are to analyze the wind speed data and assess the wind energy potential for wind energy applications. Computer code for MATLAB software has been developed to solve the mathematical model. The results are presented as a monthly and annual average for wind velocities, standard deviation, shape factor, scale factor, probability density function, cumulative distribution function, measured and Weibull estimated of wind power density, wind energy density, determination factor, and root mean square error. A comparison is made with the previous studies to select wind class of selected sites in the present work. At selected stations, the wind energy potential was the best for Najaf, Kut Al-Hai, and Baghdad respectively. According to the international wind classification, the selected sites has fair class at stations.
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elevation. Kut Al-Hai has fairly good class at selected heights. While Najaf have fairly good at (90m, and 120m) whereas Baghdad has a fairly good class just at (120 m).

References

Index Terms

Computer Science                Power Systems

Keywords

Wind energy potential, wind resource assessment, Weibull parameters.