Abstract

The Czech Republic vowed to increase the share of energy produced from reneweable sources. Wind power seems to be one of the means of achieving this goal.

The aim of this thesis is to assess the possibility of exploiting the wind energy in the district of Havlíčkův Brod. The thesis is particularly focused on locating the appropriate sites for building wind turbines and establishing technical and climatological potential of the area.

This paper contains delineation of the methodology of calculating the wind power density. Additionally, it incorporates the description of assessing the technological and climatological potential of wind power. Besides, a summary of contemporary state of technical development of wind turbines has been included as well as an evaluation of the extent of their exploitation in the Czech Republic and the EU.

The sites suitable for building wind turbines were demarcated by means of *ArcGIS desktop* software. This demarcation yielded an area of 122,93 sq.km which met the given criteria. The main limitation imposed on the exploitation of the area is the insufficient wind power density within the Havlíčkův Brod district. Another factor that places a limitation on the area suitable for building wind turbines is population density.

The size and layout of the final area enables building 121 wind turbines with a nominal power output 2 MW. Technical potential of wind power within the district of Havlíčkův Brod is expressed by the total nominal power output 242 MW and annual power production of 497 253.11 MWh. The resultant power production is low in comparison with results obtained in the area of Krušné Hory, the study of which assumes the possibility of building 288 wind turbines with nominal power output 576 MW and annual power output of 1 477 828 MWh. This confirms that the area of Krušné Hory is more suitable for building wind turbines.

KEY WORDS: klimatological potencial, wind turbine, wind energy, wind power density