

## **HORIZONTAL-AXIS WIND TURBINE OF MEDIUM CAPACITY FOR USING IN MOROCCO**

**Veselova N.V., Hasnaa Montassir**  
*National Technical University  
“Kharkiv Polytechnic Institute”, Kharkiv*

The Kingdom of Morocco is located on the northwestern boundary of the African continent and the Maghreb region. Besides its western and northern coasts towards the Atlantic Ocean and the Mediterranean Sea, it has a border with Algeria in the east, and with Mauritania in the south. The distinct areas of Morocco make for different climates across the country.

The Moroccan government has a strategy for the development of renewable energies and energy efficiency. According to statistics, Morocco's energy demand is rapidly increasing by economic and demographic growth and is expected to triple by 2030. In particular, Morocco has good climatic and geographic conditions for installation of wind turbines with 17 selected regions for their use in wind power generation. Morocco has 3500 km of coastline which means wind speeds can reach up to 10 m/s. Therefore, the estimated total theoretical potential of wind power in Morocco is 25 GW. The wind energy is a major concern and priority in the world, has become a very important research area and a motivational factor in scientific research. Wind energy is one of the fastest-growing renewable energy technologies of electricity generation. It has proved its potential in combating environmental degradation while ensuring a renewable, efficient and clean energy source. Good wind sites can even be competitive with traditional energy sources. Furthermore, the variations of monthly and annual wind speed are studied and the power and energy densities are evaluated. Wind potential is good particularly in the greater Essaouira, Tangier and Tétouan areas (where average annual wind speeds at a height of 40 m range from 9.5 m/s to 11 m/s) and in the Dakhla, Tarfaya and Taza region (with average annual wind speeds at a height of 40 m ranging from 7.5 m/s to 9.5 m/s). The highest values of wind potential occur during March, July, September and December in Dakhla and during the December to March in Taza. The highest values of wind potential occur during March, July, September and December in Dakhla and during the December to March in Taza. The medium sized horizontal-axis wind turbine is the most common type, with power ratings from 100 kW to 1 MW. This wind turbine size can be used on both on-grid and off-grid systems for villages, hybrid systems, distributed power, wind power plants, etc. It can also be used for commercial utilization.

### **References:**

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