

This paper deals with the study of a small scale wind turbine implementation for agricultural isolated location. Indeed, the electrification of these locations for industrial and agricultural requirements remains one of the largest current projects, especially when dealing with the use of sustainable sources such as solar, hydro and wind power. The main aim of this work is to validate the feasibility of using wind turbine in this location and to evaluate the performance of the excess energy storage capacity, which in this case is stored as water under the potential energy form. The study represented in this paper has been performed under the case of pumping water station using wind turbine in an isolated location at the north of Algeria, considering that this site fulfills the requirement of a favorable wind potential and a permanent water source. The design of the used wind turbine is based on the constraints of the climate data of the selected location and the lower cost of the implementation means, whereas, the water tank dimensions are optimized with respect to the daily water consumption data and the available excess of energy to be stored and to be used later for water pumping during the period of wind absence