

البحث الخامس

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- بيانات عن البحث (مكان النشر، التصنيف.....الخ)
- ملخص البحث باللغة الإنجليزية
- ملخص البحث باللغة العربية
- نسخة البحث المنشورة

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No of Authors	4	عدد المؤلفين
Authors Names	Amir Y. Hassan, A.M. Soliman, Doaa Ahmed, Saber M. Saleh	أسماء المؤلفين
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ملخص البحث الخامس

ملخص البحث باللغة الإنجليزية :

Increasing the energy extracted from the wind is of great importance because wind energy is renewable and inexhaustible. Based on this research, wind cubes are placed in front of wind turbines to improve airflow on turbine blades and maximize the energy produced by the turbine. The previous design of the wind cubes was crude and did not adhere to any scientific principles. This study proposes a novel method for obtaining optimum output from wind turbines throughout the year regardless of wind speed fluctuations by optimizing a design of the front and rear diameters of the wind cubes while also setting the lowest cost criterion within the design circumstances. An optimizer of this design employs several optimization techniques, including the cuckoo search optimization algorithm (CSA), the grey wolf optimizer (GWO), the sine cosine algorithm (SCA), and the moth flame optimizer (MFO). In the MATLAB environment, simulations and programs were created and performed. The CSA, GWO, SCA, and MFO all yield the same optimum design values, but the arrival time of the best solution is the mean difference between them, and a comparison of their arrival times is presented. Using data from four turbines in Zafarana, Egypt's Red Sea Governorate, the researchers found that wind energy may grow up to 56 times.