



## **Meteorological Factors That Affecting Wind Turbines and Effects of Extreme Winds on Terkos, Istanbul**

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Meteorological parameters have significant effects on wind turbine performance. Wind conditions and other ambient conditions exhibit these parameters. In this study, different types of risks on wind turbines due to meteorological parameters were briefly mentioned and effects of extreme winds on wind turbine tower were analyzed in particular. Furthermore, in order to exhibit effects of extreme wind, one year wind statistics and maximum wind for Terkos station which is located in Marmara region was chosen as study area and wind statistics were determined in particular. A program which had been written at Microsoft Developer Studio was used for wind statistics and Minitab 14 software was used to obtain Weibull distribution graphics. For extreme wind analysis, the extreme wind which has a 50-year recurrence period was calculated at Microsoft Developer Studio by using Istanbul Metropolitan Municipality Directorate of Housing's 5th Version (2009) Wind Regulations of High-Rise Buildings.

**Keywords:** Wind turbines, effects of meteorological parameters on wind turbines, extreme winds, maximum wind, wind statistics, Istanbul Metropolitan Municipality Directorate of Housing's 5th Version (2009) Wind Regulations of High-Rise Buildings