ABSTRACT:

This project involves the research on the efficiency of "Gelibolu Modeli", which is a new model of wind turbine and the parameters affecting this efficiency.

The main shaft in wind turbines with vertical shafts, rotates with the torque power (Q), which is the difference between the combination of positive (p) (=rotating) and negative (n) (=stopping), (Drag) (=D) and (Lift) (=L) powers:

(Dp+Lp)-(Dn+Ln)=Q1 **(1)**

But in "Gelibolu Modeli" wind turbines, negative powers are conveyed to the sides and back of the turbine by means of leading wings (=augmentation-direction wings).

This not only eleminates the stopping effects of the negative powers, but also adds to them by creating a vacuum behind the turbine which constitutes a lifting power.

In other words, the "Gelibolu Modeli" wind turbine gets rid of the functional and structural disadvantages of vertical shafted wind turbines by changing them into additional advantages:

((Dp+Lp1)+(Lp2))-Dn=Q2 **(2)**

Q2 > Q1 **(3)**

This power increasing feature of the new turbine has been attested by experiment and test reports: This means the "Gelibolu Modeli" wind turbines can be manufactured compact sizes still producing the same amount of power as the other much larger wind turbines.

Secondly, the new turbine automatically adjusts its direction to the wind by means of its "direction and augmentation wings", thus eleminating negative powers and increasing positive powers and resulting in approximately a three or four times more (RPM) and/or power.

The "Gelibolu Modeli" wind turbine has also been proven to produce a few times more power than the "Darrieus type" wind turbines, which we come across in literature and generally exist in application.

Research has shown that parameters that affect efficiency are of two kinds:

a) obligatory parameters (those of augmentation- direction wings)

b) modifiable parameters (those of power wings)

Throughout this report appropriate information has given about all these parameters.