**Formulas**

1. Betz’s Law

The efficiency of a wind turbine

P = ½ p \* A \* v^3 \*

where:

* P = power (Watts),
* ρ = air density (kg/m³),
* A = swept area of the turbine blades (m²),
* v = wind speed (m/s),
* Cp​ = power coefficient (max 0.593 due to Betz’s Law).

1. Lanchester Law’s

Lift (L) and Drag (D) are calculated as:

L = ½ p \* v^2 \* A \*

D = ½ p \* v^2\* A \*

Where:

* L = lift force
* D = Drag force
* = coefficient of lift
* = Coefficient of drag
* A = blade area
* V= wind speeds

1. Kutta-Joukowski Theorem

The lift force per unit length

L = pv

Where:

P = air density

V = flow velocity

Γ = circulation around the object