

The invention relates to wind-power engineering, namely to wind turbines with horizontal axis and can be used to convert renewable energy, in particular to convert wind energy.

The wind turbine with horizontal axis comprise a tower (4), on which are installed a rotor (2) with three aerodynamic blades (1), located on the hub of the rotor (2) at an angle θ relative to the vertical plane of the rotor (2), the value of which is determined by the formula:

$$\theta = 2 \arcsin \frac{y_{\max}}{D} = 2 \arcsin \frac{F_{\max} \left(\frac{D}{2}\right)^3}{D3EI_y} =$$

$$= \arcsin \frac{F_{\max} D^2}{12EI_y}$$

where: y_{\max} is the amplitude of displacement of the blade tip;

D – rotor diameter;

F_{\max} – maximum deflecting force;

E – modulus of elasticity of blade material;

I_y – the moment of inertia relative to the axis of symmetry of the blade's aerodynamic profile.

The distance from the vertical plane of rotation of the blades (1) to the outer surface of the tower (4) is minimal.

Claims: 1

Fig.: 6

