

WIND POWER

The formula for the power per m² in [Watt/m²] is:

$$P = \frac{1}{2} \rho V^3 \left[\frac{\text{Watt}}{\text{m}^2} \right]$$

V is the wind speed [m/s],
ρ is the air density [kg/m³]

The dry air density at standard atmospheric pressure (STP) at sea level and 15 °C is:

$$\rho = 1.225 \left[\frac{\text{kg}}{\text{m}^3} \right]$$

Although the power of the wind at a wind speed of 7 m/s is 210.0 W/m², it must be noted that the average power of the wind at a given site with an average wind speed of 7 m/s is about twice as large. The distribution of wind speed according to the Weibull distribution function must be taken into account.

Wind speed [m/sec]	Power Flux [W/m ²]
1	0.6
2	4.9
3	16.5
4	39.2
5	76.2
6	132.3
7	210.1
8	313.6
9	446.5
10	612.5
11	815.2
12	1058.4
13	1345.7
14	1680.7
15	2067.2
16	2508.8
17	3009.2
18	3572.1
19	4201.1
20	4900.0
21	5672.4
22	6521.9

23	7452.3
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