

VAWT pros'

- Noise free, well almost (2 to 3 decibels)
- Deliverable power at lower RPM, which translates to 10KM/H wind speed required.
- Omni directional, without losing efficiency as the wind changes direction.
- One moving Part.
- PMG, Permanent Magnet Generator, new technology.
- Cannot over speed.
- Maintains efficiency through "gusty" wind conditions.
- Bird friendly, as birds see it as a solid object and simply fly around it.

VAWT cons'

- Some model is quite a heavy object.
 - Some model is quite bulky in appearance.
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HAWT pro's

- Operates brilliantly where wind speed is consistent.
- Lightweight object, aesthetically appealing.
- Deliverable power at around 14 KM/H wind.
- "Tail" that directs blades into the wind should wind change direction.
- Aerodynamically efficient blade design, with suitable flex.

HAWT cons'

- Noisy (80 decibels plus)

- Not Bird friendly, as birds cannot see blades during flight.
- Loses efficiency , when steering blades into oncoming wind.
- Breaking/cut out mechanisms during high wind speeds.
- Gearing systems with potential maintenance problems.
- Potential Public Health risk should blades become detached during gales force conditions.

Comparison on VAWT and HAWT of 200w – 100Kw

| S.N. | feature | HAWT | VAWT |
|------|---|---------------------------|---------------------|
| 1 | efficiency | 50-60% | more than 70% |
| 2. | Magnetic disturbance (carbon brush) | yes | no |
| 3 | parts taking the wind | needed | no requirement |
| 4 | speed gear box | needed for 10Kw and above | no |
| 5 | space for the running blade | bigger | smaller |
| 6 | capacity of wind Protecting | weak | strong (25-35m/s) |
| 7 | noise | 35-60 db | no |
| 8 | starting wind speed | high (2.5-5m/s) | low (1.5-3m/s) |
| 9 | projection interference on human being | dizziness | no |
| 10 | stoppage | higher | lower |
| 11 | maintenance | complicated | simple |
| 12 | speed | higher | lower |
| 13 | interference on bird | bigger | smaller |
| 14 | damage on the cable and Carbon brush | yes | no |

15 power curve

in hollow

stable

16 shake

yes

no