Footprint, Lessons, and Innovation

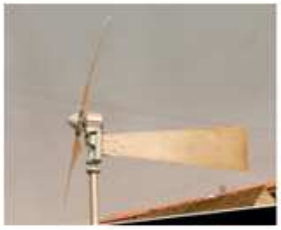
Footprint from 1984 to 2000

From 1984 to 2000, Taos Wind Energy developed many types of small wind turbine, such as varied pitch, furled rotor, and tilting-up rotor, and succeeded in Chinese and worldwide marketing.

Rotor tilted up

Varied pitch

Rotor furled aside



Lessons from 1984 to 2000

The lesson from these works is:

1. **Various mechanical protections are also potential failure factors themselves to make turbine being lack of safety and reliability.**

   In the early this century, some advanced company developed their new machines without any mechanical protections. These new machines are compacter, simpler, and more reliable.

2. **In physics, the stablest position of an object in gravity field is the lowest position where the potential energy is lowest. Likewise, the downwind position is the stablest position of a wind rotor in wind field. The unstable up-wind position of wind rotor is supported by tail van. And the higher the wind speed, the more severe the load on tail van; the more severe the flutter of tail van. The tail van is a cause of failure and noise.**

3. **Reviewing the whole course of small wind turbine technical progress, the kernel is progressively simplifying based on new material and latest technology, such as discarding gear-box by introducing permanet magnet low speed alternator; discarding machanism for**

varied pitch by fixed-pitch rotor design technology, etc. The simpler structure, the more reliable samll wind turbine.

⚠ **Various mechanical protections are also potential failure factors themselves**

⚠ **Tail van, suffered from severe load, is a cause of failure and noise**

⚠ **The simpler structure, the more reliable small wind turbine**

Innovation from 2006

Based on experience over 20 years, we now create a downwind passive yawing structure design which discards the tail van and any mechanical protection set. The wind turbine has only two pairs of parts with relative rotation to make structure more compact and more reliable, and the ability to 'catch' wind is high much owing the lower yawing inertia. We are confident that the downwind passive yawing structure means the new high of development of small wind turbine.

⚠ **Downwind passive yawing structure design. Next generation small wind turbine!**

⚠ **More compact, more sensible, more reliable!**

We are pleased to see that types of downwind passive yawing structure design are arising . Southwest marketed their downwind passive yawing type Skystream3.7 in 2006 and awarded 2006 Best of What's New Award from Popular Science in the Home Category.

The downwind passive yawing structure design will be the next generation small wind turbine.