



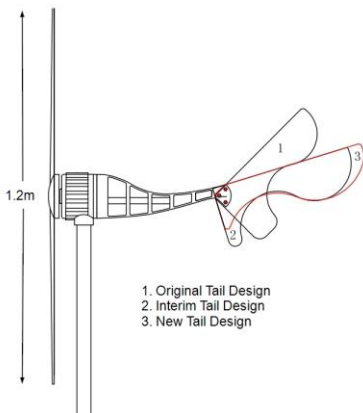
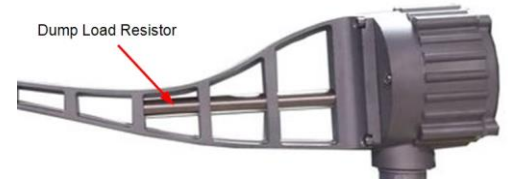
Tycon Engineering Brief



The New and Improved BreezePro® Wind Turbine.

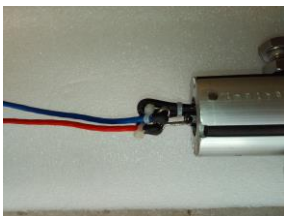
Over the past year, our engineering team at Tycon Systems has been hard at work improving the BreezePro® wind turbine design. We have made several changes to improve performance and reliability.

1. As you probably know, small wind turbines have had historical issues with burnout in sustained high winds. Our engineers have found a cost effective way to solve this issue by using a dump load to pull the high currents from the coils inside the unit so the coils don't overheat. They came up with an ingenious design to hold the dump load in a hollow die cast metal tail so that excess heat can be safely released to the atmosphere.



2. Blade diameter has been increased by 8cm and slight changes were made to the blade shape in order to provide more power from light winds. The blade weight was not increased with this change.
3. We have improved the tail design to provide better tracking of the turbine in variable light winds. Design was improved in two iterations after extensive field testing.

4. We improved the blade hub assembly attachment using a castle nut and cotter pin approach instead of a standard stainless steel nut. We had found that the standard nut approach could become overtightened when the unit brakes in high winds which could increase pressure on the front bearing and cause increased rotational resistance over time. This would have the effect of reducing output power in light winds. By using the castle nut with cotter pin the pressure on the front bearing will remain constant over time, resulting in improved reliable performance.



5. Improvements have been made to the commutator design to prevent stress caused by the weight of connecting wires pulling on the wind turbine commutator wires. A mechanical strain relief was added to make sure the connecting wires cannot pull against the commutator.