12 volt alternator windmill

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If you''re new to idea of building a wind generator out of re-purposed components, then you''ve probably asked yourself a few of the following questions:

Well, maybe we threw in that last question ourselves! But either way, if you''ve every had questions about using re-purposed car alternators, here''s your chance to read all about it.

Around the world, it is increasingly popular to find wind power enthusiasts taking advantage of excess supplies of alternators or motors originally designated for doing things other than making electricity from the wind. In Australia and New Zealand, Fisher & Paykel washing machine motors are enormously popular, since these washing machines use large permanent magnet motors. In North America, Ametek, Inc. is known for its tape drive motors, which until recently were widely available and extremely popular for making wind generators.

But perhaps no other brand comes up as frequently when it comes to DIY small wind power as the Delco brand of permanent magnet alternators.

The Delco name comes from the Dayton Engineering Laboratories Co, a long-time supplier for the General Motors Company. Delco had a long and storied history including developing the first reliable battery ignition system. The company was incorporated into a number of larger mega-corporations, manufacturing hundreds of vital components that went into American-made automobiles. And though GM continues to use the Delco brand name, including for its ACDelco parts division, the company has evolved considerably since it''s early pioneering days.

Since the early 80s, there has been a tremendous amount of excess manufacturing capacity in the American auto industry, which often went into making a lot of components that didn''t necessarily find their way into cars. These alternators that didn''t find a home under a hood still ended up finding a way to be useful. For wind power enthusiasts, Delco has experienced a renaissance. Re-purposed car alternators have become extremely popular and relatively cost-effective for use in small wind generators.

Most ACDelco generators that you find sold for the express purposes of being a wind generator have been re-purposed or refurbished. The reason for this is that a Delco car alternator operates under a different set of conditions when used in a wind turbine--at least as compared to a permanent magnet alternator.

A car alternator''s stator is wound to operate at very high RPMs, mostly because the alternator in a car has the luxury of being turned by a powerful, high rpm engine. The operating rpm of a Delco car alternator is around three times the rpm of the car engine''s crankshaft. A car''s crankshaft generally operates at around 1000 - 4000 rpm. For this reason, a Delco car alternator is designed to put out good charging voltage and amperage at

around 3000-12000 rpm.

By comparison, a small wind turbine with a roughly 60-inch diameter rotor might hit 850 rpm in 25 mph wind! 850 rpm is far below the threshold for a standard Delco car alternator to even start charging a 12 volt battery bank!

When one uses a Delco car alternator as a wind generator, it is absolutely necessary to modify the alternator to operate at low RPMs. This is accomplished with two intricate modifications:

[If you are new to wind power, you should read our article How to Choose a Motor to learn about why rpm and voltage are so important for proper battery charging]

There are a few reliable and responsible companies that sell these popular Delco or Delco-style alternators that have been modified to be suitable for use as wind generators. The only one we would specifically recommend is WindBluePower ().

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