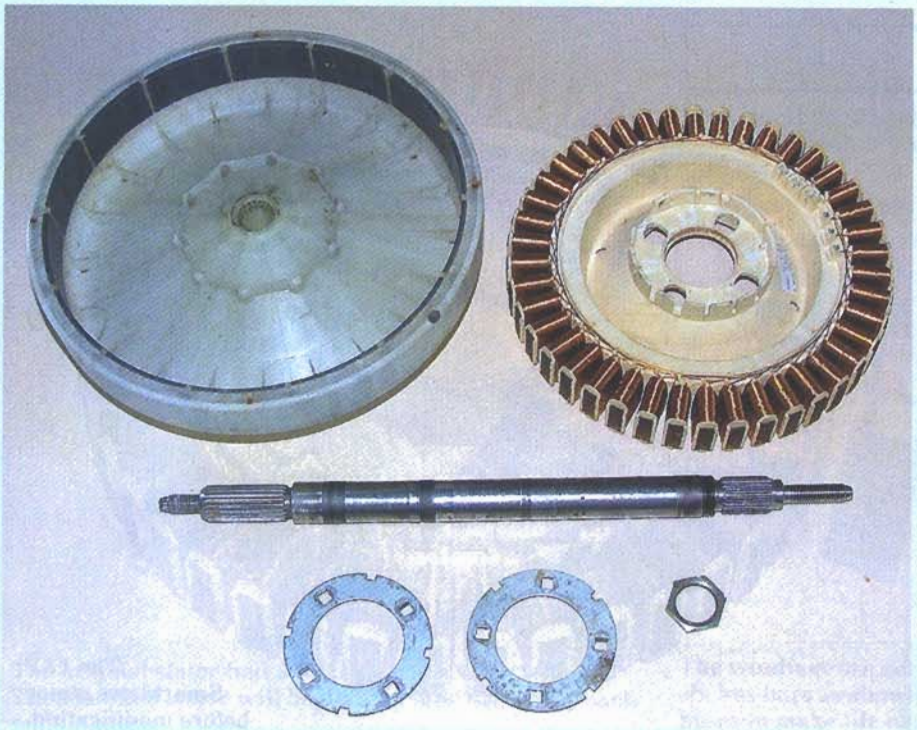

Inside the Fisher & Paykel Smartdrive washing machine motor – top left is the magnet hub, top right the stator, centre is the drive shaft, while at the bottom are the retaining plates and nut. We need all these parts for our windmill.

I started this windmill project a couple of years ago as an experiment and it has since developed into not only a reliable wind generator but a rewarding hobby.

Please note that what is described here is not a complete system but an ideas platform, to allow you to develop your own windmill.

The results depend on your own abilities and the final location of the windmill. But with care in construction, especially the propeller blades and a position with 20km/h or higher wind speeds, you can expect to achieve output powers of 300W or better.

Construction will be divided into three sections: alternator, platform, and blades.

This month we will concentrate on the alternator. Next month will be for the platform to support the alternator, propeller and tail assembly and after that we will show you how to make a set of high-performance timber blades.

But first up a reality check: are you sure you want to build a windmill of this scale? You're going to need at leasT an acre of land – it's not a good idea erecting a two-metre diameter windmill on a six-metre mast in your suburban back yard, unless you get along VERY well with your neighbors!

Some people consider windmills visual pollution and will complain. And you should get approval from the local authorities before putting up the mast. In addition, you will need good average winds and a location with a clear view (from the windmill's perspective). This windmill won't generate any useful power unless the wind speed is over 20km/h.

Noise

Despite what many think, windmills are not noisy. You will not normally hear any noise from a windmill unless you are almost standing next to it (or

Warning: please note the following!

Windmills can be dangerous if not constructed carefully.

While the windmill described here was designed to be strong, we have no control over the handyman capabilities of the builder or the effects of mother nature and therefore offer no guarantee of safely or durability.

Also note that the alternator described here can produce dangerous voltages, even when spun at low speed.

Treat all electrical terminals as dangerous at any time the alternator is rotating.

We recommend the following:

Obtain local government approval before erecting your windmill.

Obtain an engineer's approval for any windmill you build, especially the tower and footings. (Local government approval will probably require it anyway).

Don't scrimp on safety equipment (eg, guy wires) or on protection from the elements (especially rust and corrosion protection).

Don't place your windmill where a failure could cause injury, as towers can fall over and blades can break free. It is recommended that the ground around the windmill be clear of buildings, kid's play areas, etc, to at least the height of the windmill (including the blades) and that it be placed at least that distance from your property boundary.

A badly corroded drive shaft. This might be OK for bench testing but I wouldn't stick a big propeller on it!

*www.thebackshed.com