

# The Answer My Friend Is Blown In The Wind

As more electronics are used every day, the importance of electricity has grown significantly. Unlike the U.S., Japan has limited natural resources, so approximately 62% of the electricity is generated

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from oil, natural gas and coal, and 27% is generated by nuclear power. Both the rise of fuel costs and the concern over green house gases are causing many communities and individual

homeowners in Japan to take another look at wind power.

In parts of Japan and throughout the world where wind is consistent, wind power is becoming an attractive option. Wind generators convert the kinetic energy of the wind into rotational motion via blades. There are many blade types and sizes, each designed for a particular wind environment. In most wind generators gears

are used to speed up the rotational motion which runs a generator.

The small wind generator (shown in the picture) uses neodymium magnets that can generate electricity, even at



Windmill

low speeds. It can effectively produce power with wind speeds from 4.5mph to 30mph. When wind speeds start to exceed 30mph a regenerative

braking system is activated within the generator so that it does not go into an over-speed condition. If the generator senses gale or hurricane force winds the regenerative brake is not strong enough to prevent an over

speed condition. If this happens, the Ogura brake is activated. The brake comes on and locks the generator and blades.

The windmill uses Ogura's VBEH-5 (power on) brake,

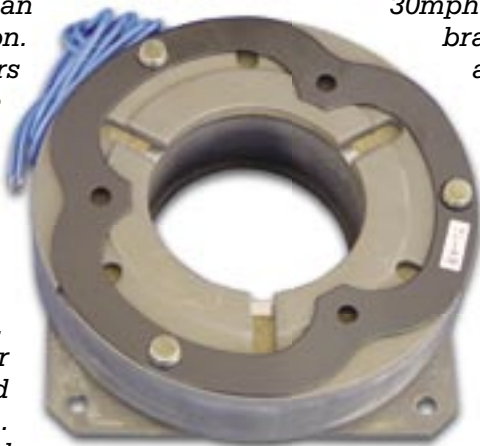
connected directly to the generator input shaft. The VBEH-5 uses a compact high torque coil and a single spring armature. When the brake is not in use there is no contact and no frictional force on the armature, so there is no additional drag and/or power consumption in normal operation.

After the storm has passed a wind sensor releases the brake and allows the generator to continue providing electricity for little

Akira so he can play his Nintendo.

The reason that a power on brake was chosen was because the windmill would only need emergency holding less than five percent of its operating life, so if a spring applied brake had been used in this application it would require power 95% of the time. The VBEH-5 power on brake receives its current to energize from a battery. As a backup to the battery a small solar panel provides charging power if there is no wind for an extended amount of time.

As an environmentally conscious company Ogura finds it rewarding to apply products to these types of applications. Over the past few years Ogura has made a number of changes within their production facilities to reduce the impact on the environment. In 2008 this will continue and updates will be posted in the newsletter.



Ogura VBEH5