Build Your Own Windmill

A couple of Australians, Ken Sulman and Peter Williams, each put together relatively inexpensive wind-powered water pumping systems based on a vertical shaft design. Sulman has posted a wealth of information on the windmill at his Website, including plans and photos.

The vertical windmill has one big advantage over a traditional windmill: It doesn't have to swing around to face the wind.

Sulman's windmill replaced a gasoline engine he was using to power a water pump on his 12-acre hobby farm, which he used to water his small orchard.

The windmill is made from steel barrels that drive an old car rear end. The rear end makes a right angle drive that powers a conventional windmill piston pump.

"After many months of thinking and cutting, it was finally ready to test," he says. "The day we pumped our first gal water was like winning the lottery.

"Since that day we have learned a lot about the way water can be moved and I have made many new friends," he writes.

He says he and his wife now have a productive orchard, plenty of water to irrigate anything they want, and it doesn't cost them a cent.

Williams says when he and a friend were considering building their own windmill a few years ago, the vertical design - often called a Savonious Rotor - seemed to be best suited to their needs and available materials.

They rounded up four empty 44-gal. drums and cut them all in half lengthwise, giving them eight halves. They constructed a tower about 20 ft. tall using 2-in. steel pipe with 1 1/2-in. pipe for bracing.

To make the rotor, they welded the half-drum sails to the 2-in. shaft. They connected the drum halves top and bottom with steel straps to keep them from twisting in the wind.

Then they used self-centering bearings to attach the finished rotor to the cross bracing on the tower.

Since the rotor turns vertically and they needed to connect to a horizontal shaft to drive the pump, they used pulleys and V-belts to make a right angle drive. A lever operated "dog" clutch between the rotor shaft and the pump shaft allows them to turn off the pump when it's not needed. To drive the pump, they welded a disc at the end of the drive shaft. To that, off center, they attached a ball joint from an old Ford Falcon, to give it a cranking motion. A shaft from the ball joint cranks the pump.

Williams says his windmill was very simple to make and everything they used was either scrap or off the shelf parts.

Contact: FARM SHOW Followup, Ken Sulman, E-mail: windmill@southcom.com.au; Website: www.southcom.com.au/~windmill/).

Windmill is made from steel barrels that drive an old car rear end, which serves as a right angle drive to power a conventional windmill piston pump.

Wedge-Shaped Windmill Requires Much Less Wind

For several years, retired farmer and machinist Fred Brammeier has been working on a new type of windmill that he says will operate more efficiently and in lighter winds than conventional windmills.

Brammeier says he woke up one night in August, 1992, with the idea for what he calls the WedgeWind. After many sleepless nights and many drawings, he had a concept which he proceeded to patent in the U.S. and several foreign countries.

Shaped somewhat like a pyramid laying on its side, it works on the same principle as an airplane wing. That is, air hits at the point and is forced up the slanted sides. There are turbines on three sides of the base which look like squirrel-cage fans.

"Air speeds up and becomes concentrated as it moves up the sides," Brammeier explains. At the same time, the speed of the air moving along the outside of the wedge creates a vacuum from inside it, so the wind wraps itself around the turbine blades, creating additional force.

"This allows it to produce power in much lighter winds than a conventional windmill," he says.

Brammeier has produced a small model of his invention that measures 40 in. from point to base. He envisions a full-sized version measuring 35 ft. from point to base, with 35-ft. sides. He's currently working with a metal shop to produce one.

"The best part of this is it has so much blade area that it doesn't have to be high in the air or require a high wind to make it economical. It will make electricity in the slightest breeze and can continue operating in high winds when other mills have to shut down or cut the blade pitch in order avoid damage," he says.

Rather than driving a generator directly or with belts and pulleys, Brammeier will power hydraulic pumps with the WedgeWind turbines. Hydraulic pressure from the three turbines will be used to operate a generator, or a bank of generators. "There'll be governing and pressure relief valves in the hydraulic system, in order to provide a steady flow to each generator," he says. When the hydraulic system has built sufficient pressure to operate the first generator at a steady speed, a valve will open to begin powering it. If the pressure continues to build, eventually the governing valve for the second generator would open, and so on. If pressure continued to build after all the generators in the system had kicked in, the relief valves will allow the hydraulic fluid to escape from the pressure tank and recirculate.

Fred Brammeier says his windmill, which is shaped like a pyramid laying on its side, works on the same principle as an airplane wing. When air hits the point it's forced up the slanted sides. Note turbines on three sides of the base.

Brammeier says farmers could locate a WedgeWind on top of a building or grain bin. He's looking for a manufacturer.

Contact: FARM SHOW Followup, Fred Brammeier, Box 988, Wilton, Iowa 52778 (ph 563 529-0370).

Where To Buy A Windmill

Water-Pumping Windmills

Aermotor Windmill Company, Inc.
P.O. Box 5110
San Angelo, Texas 76902
Ph 800 854-1656 or 915 651-4951
Fax 915 651-4948
Website: www.aermotorwindmill.com
Contact Sales Manager: James Dockal
E-Mail: aermotor@wcc.net

American West Windmill Co.
P.O. Box 30310
Amarillo, Texas 79120
Ph 888 535-4788
Fax 806 373-4678
Contact: Burton Shepherd or Roy Harris
E-mail:amww@amerwestwindmill.com
Website: www.amerwestwindmill.com

Southern Cross Industries (Pty) Ltd
Ken and Sharen O'Brock
O'Brock Windmills
9435 12th Street
North Benton, Ohio 44449
Telephone/Fax: 330 584-4681
Website: www.obrockwindmills.com

WINDTech International, L.L.C.
P.O. Box 27
Bedford, NY 10506-0027
Ph 914 232-2354
Fax 914 232-2356
E-mail: info@windmillpower.com
Website: www.windmillpower.com
Contact: Peter T. Michaelis,
Website: windtechpm@msn.com

Power-Generating Windmills

Northern Power Systems
182 Mad River Park
P.O. Box 999
Waitsfield, Vermont 05673
Ph 802 496-2955
Website:
www.northernpower.com
Contact: Garrett Bywaters,
E-mail:
contact@northernpower.com

Atlantic Orient Corporation
Farrell Farm Road, RTE 5N
P.O. Box 1097
Norwich, Vermont 05055
Ph 802 649-5446
Fax 802 649-5404
E-mail: aoc@vermontel.net
Website: www.aocwind.net
Sales Contact: Robert Sherwin
Engineering: Mark Young

Bergey Windpower Company, Inc.
2001 Priestley Avenue
Norman, Oklahoma 73069
Ph 405 364-4212
E-mail: sales@bergey.com
Website: www.bergey.com

Bonus Wind Turbine
Fabriksvej 4
DK-7330 Brande, DENMARK
Ph +45-9942-2222;
Contact: Palle Norgaard,
bonus@bonus.dk
Website: www.bonus.dk

Water-Pumping *And* Power-Generating Windmills

Southwest Windpower
P.O. Box 2190
2131 N. First Street
Flagstaff, Arizona
86003-2190
Contact: Andrew Kruse
Ph 520 779-9463
Fax 520 779-1485
E-mail: andy@windenergy.com
Website: http://www.windenergy.com

Wind Turbine Industries Corporation
16801 Industrial Circle, S.E.
Prior Lake, Minnesota 55372
Ph 952 447-6064
Fax 952 447-6050
E-mail: wtic@windturbine.net
Website: www.windturbine.net
Contact: Steve Turek,
E-mail: steveturek@windturbine.net

Large Power-Generating Windmills

Lorax Energy Systems
Corporate Office:
1659 State Street
Webster, NY 14580
Ph 585 265-6690;
Fax 585 265-1306
Contact: Henry duPont
E-mail: hdp@lorax-energy.com
Website: www.lorax-energy.com

GE Wind Energy
13000 Jameson Road
P.O. Box 1910
Tehachapi, California 93561
Ph 661 823-6700
Fax 661 822-7880
E-mail: windenergy.usa@ps.ge.com
Website: wind@gewindenergy.com

Nordex USA, Inc.
360 Office Building
2080 N. Highway 360, Suite 140
Grand Prairie, TX 75050
Ph 972 660-8888
Fax 972 660-2220
Website: www.nordexusa.com
E-mail: info@nordexusa.com

The Wind Turbine Company
1261-120th Avenue NE
Bellevue, WA 98005
Ph 425 637-1470
Fax 425 637-1483
Website: www.windturbinecompany.com
Contact: Larry Miles,
E-mail: MilesLW@msn.com

Wind Power Trade Association:

American Wind Energy Association
122 C Street, NW, Suite 380
Washington, DC 20001
Ph 202 383-2500
Fax 202 383-2505
Website: www.awea.org