

Low-Drop Hydroelectric Generator

If you live near water and have (or can create) just a 20 to 35-ft. drop, you can set up a generator to power your home for about \$4,000, says Bill Scott.

After years of research and development, the retired mechanical engineer designed a low-head hydropower cross-flow turbine generator that consistently produces 1,500 watts of energy. That's more than enough for most non-electrically heated homes which use about 1,000 watts continuously.

Low-head refers to how much the water drops before going through the turbine.

"I had a small creek without a lot of drop and tried other turbines on the market. With low volume and low head nothing would work," Scott says. "This works like a squirrel cage made of stainless steel."

Water, coming from a source about 20 ft. above the turbine, is directed through a 6-in. pipe with a screened inlet to keep out debris. The water shoots horizontally through the turbine and turns blades to power the permanent magnet 3-phase alternator of the generator. That power feeds directly into the utility grid or controls to charge batteries.

Scott began working on the turbine generator after moving to Republic, Wash.,

in a remote area near the Canadian border. With a \$100,000 investment required to bring in electricity, he first tried solar power, which didn't work well with too many cloudy, snowy days. With a creek nearby, hydropower made the most sense, and Scott has had his turbine installed for about a decade. He sells a basic turbine/generator to connect into a power grid for \$3,900, or \$5,800 with a grid tie inverter. Systems to charge batteries cost \$5,250 and \$7,900.

"I charge just one 24-volt battery," Scott says, because he has continuous power and doesn't need batteries for storage. He has enough electricity to power his house and shop.

The system runs year round since water continues to flow, even when the creek freezes over. One customer in Alaska runs a resort with the turbine. Other turbines have gone to Belize, Germany, Australia and developing countries.

"It works on any remote site with flowing water," Scott says. Besides residential customers he knows of a water treatment plant that uses the turbine to power a remote office. A fish hatchery uses overflow water to power the hatchery.



Low-head hydropower, cross-flow turbine generator "works like a squirrel cage made of stainless steel", says inventor Bill Scott.

Other than occasional greasing, the turbine is maintenance-free, Scott says. His has run for 10 years without any problems. He suggests building a structure over it to protect it from snow and rain.

"It's amazing how simple but complex it can be," he says, noting it took lots of trial and error to get the forms just right for a Spokane foundry to cast the turbines.

Contact Scott to find dealers in your area or order directly from him. Scott welcomes dealer inquiries.

Contact: FARM SHOW Followup, Scott Hydroelectric, P.O. Box 501, Republic, Wash. 99166 (ph 509 680-4804; www.scotthydroelectric.com; ScottHydroelectric@outlook.com).

Powered Shears Makes Pruning Safe, Fast

Vineyard and orchard owners know the value of employees who are skilled at pruning. So they appreciate tools like INFACO's new electronic pruning shears F3015 that prevent repetitive motion injuries and keep people working longer. Just a light pull on the trigger efficiently cuts through wood up to 2 1/4-in. dia.

The F3015 is much more than an electric pruner, says Amanda Van Hoorn, operations manager.

• With its patented safety system, it eliminates the possibility of cutting off a finger with the pruner's 2-tons of torque. Workers wear a cotton glove on their non-pruning hand that is plugged into the same battery as the shear. The glove is interwoven with metal fibers and since they "are both on the same circuit, any contact between the glove and shear grounds it out so the blade

can't cut workers. In practice, it looks like the blade just bounced off of a cotton glove," Van Hoorn says.

• The lithium ion battery is light and charges in just 90 min. "In the past it had a 5 1/2-lb. battery that had to be kept charged during the off-season. Now it's under 2 lbs. and you can even clip it to your belt," she says. The charger re-balances cells with each full charge and features a hibernation mode so the battery can be stored off season without recharging. Fully charged, a battery lasts 8 to 9 hrs.

• Interchangeable heads fit on the shears to do a variety of trimming jobs. That eliminates the need for employees to carry extra tools. "We have a nursery client in Florida who has 10 electronic pruning shears who switched from using 3 different tools to just our one shear. There's no productivity decrease from

fatigued workers and time is saved by not having to switch tools," Van Hoorn says.

• Extension poles featuring sliding mobile triggers easily convert the shears to a pole pruner. The light and durable carbon fiber poles come in a variety of lengths to adapt the shears to any type of work. They also eliminate ladders, which speeds productivity up to 300 percent and can reduce injuries.

The cost for the shears set is \$2,197 for the F3015 with a lifetime warranty on the aluminum body, a 3-year gear-motor warranty, and a 5-year pro-rated warranty on the battery. It's an effective investment for vineyard and orchard operators facing a labor crisis who want to keep their best workers pruning for years to come.

It was a labor shortage in French vineyards that inspired INFACO founder Daniel Delmas to invent the world's first electric



Cutting through wood up to 2 1/4 in. dia. is easy with this new electronic pruning shears.

pruning shears in 1984. The company has sold more than 250,000 shears worldwide, helping farmers increase safety and solve their labor problems.

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Jim Ross needed bigger wheels on his Craftsman mower, so he switched from 20-in. tires on 8-in. wheels to 23-in. tires on 12-in. wheels. He cut up the original 8-in. wheels, saving only the centers.



Bigger Wheels Mounted On Craftsman Mower

"I bought a used Craftsman 54-in. riding mower that had a major design problem," says Jim Ross, Brockway, Penn. "The mower rode too low so the deck could not drop down to all of its 5 mowing positions. It was always getting hung up on high spots in the yard.

"I fixed the problem by switching from the original 20-in. tires on 8-in. wheels to 23-in. tires on 12-in. wheels. I did it by cutting up the original 8-in. wheels, saving only the centers in order to mount the wheels on the 3/4-in. axle. I drilled 2 extra holes to

give them a 4-bolt pattern on 4-in. centers, also drilling that pattern into the new 12-in. wheels. I bolted the old centers onto the new wheels and fitted the wheels with the 23-in. tires. They gave me the height to float the cutting deck. No more getting hung up and I like the larger selection of tire tread patterns available for the 12-in. wheels."

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Neil Stemmann belly-mounted a 40-in. dethatching rake on his Cub Cadet tractor. He uses it to help prepare ground for spring reseeding of dead grass areas in his lawn.

Old Cadet Fitted With De-Thatcher Bar

"My old Cub Cadet model 72 was retired from mowing years ago but it's still used to haul firewood each fall. That faithful 7 hp. Kohler engine is the best - it just keeps running," says Neil Stemmann, Red Wing, Minn.

"A lot of the Cub Cadet's efficiency was lost due to the design of the deck with the 90° drive belt arrangement, although the 3-blade deck itself was very well built.

"I recently mid-mounted a 40-in. dethatching rake on the tractor that helps

prepare ground for spring reseeding of dead grass areas in our lawn. I was able to use the arms and lift lever from the old mower deck lift. Eight spring teeth, originally intended for pickup use on a baler, are mounted on a piece of 3/4-in. ID pipe. It really works well and is another way to put our Cub Cadet to use."

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