

Do-It-Yourself LED Flashlight

You can make your own low-cost LED flashlight by using pvc pipe and electric components commonly available at stores like Radio Shack, says David Strenski, Ypsilanti, Mich., who recently called FARM SHOW to tell us about his light.

"I was completely hooked after the first one I made was left on overnight and the LEDs were still as bright as new the next morning," says Strenski.

He has since gone on to make several more flashlights, using 1-in. dia. pvc pipe. Power is provided by three C batteries. Since LED lights consume so little power, he decided to solder the wires directly to the batteries. "The design requires no springs or metal pieces and provides a more reliable connection," he says. A toggle switch is used to turn the power on or off.

According to Strenski, LED flashlights have become more popular in recent years because LED technology has gotten better. There's no glass or filament, so if you drop the flashlight there's nothing to break. And best of all, LED flashlights are typically rated for tens of thousands of hours because they use so little power.

"The cheapest commercial LED flashlight I could find was a two-bulb model that sold for \$30. One 19-bulb model sold for \$150. That's when I decided to build my own. I've built several different models for between \$15 and \$20.

"Advertisements for retail LED flashlights claim about 50 hours of full brightness and another 100 hours of usable light, all with a flashlight that has only two AA batteries. I'm using three C batteries, so my flashlight should last much longer. I'm always improving the design and looking for cheaper sources for different color LEDs and cheaper switches," he says.

He discovered that a C battery fits perfectly inside a schedule 40 pvc water pipe, so he used it for the main portion of the body. A pvc cap fits over the bottom end.

Each battery has a voltage of 1.5 volts. For LEDs needing 3.0 or less volts, he trims the pipe to hold two batteries. For LEDs that need more than 3 volts, he uses three batteries providing a total of 4.5-volts.

The torch end of the light is made from a pvc coupler. A lens cut out of plexiglass is shoved into one end of the coupler, up against the stops.

The torch end of the light is made from a pvc coupler. "You can glue a clear plexiglass cover on the end, but I find you don't need it," says Strenski. He solders the LEDs onto a small circuit board that is trimmed to fit inside the coupler and rest against the stops. A small resistor needs to be soldered onto the positive lead of each LED to step the voltage down from the battery voltage to the voltage needed for the LED.

Strenski continues to work on new varia-



David Strenski has made several LED flashlights for between \$15 and \$20. With no filament or glass, there's nothing to break if it drops. LED lights are rated for tens of thousands of hours because they use so little power.

tions of the flashlight. "To make my third and fourth flashlights I bought white (\$1.24) and red (56 cents) LEDs from SuperBright LED.com, and was able to fit nine of them on the circuit board. I've also found that I can get really cheap 99 cent, plastic flashlights that I can rework into LED ones, but the circuit gets tricky since it only holds two batteries and for the white LEDs I need to

step the voltage up with a DC/DC converter. I'm still working on that design."

Strenski sells a 3-page instruction sheet for \$5. He's working on a short instruction book that he'll make available in the future.

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Four-Wheeled Center Pivots Don't Make Deep Tracks

Center pivot irrigators can avoid deep wheel tracks by adding two wheels and two gearboxes to each tower, says E-Z Irrigation, Wray, Colo. It results in four drive wheels per tower, running in line.

The extra tires do two things, says Dale Anderson. "They put more tire lugs on the ground, which increases traction and reduces slippage. And they increase the total tire surface area on the ground, which increases flotation. An additional benefit is that flat tires can almost always be repaired at the pivot road, as the other tires will carry the tower out of the field even if one goes flat."

The company makes a mounting system for each gearbox and wheel. A 3-in. length of channel iron extends the length of the tower beam and is welded to the tower base beam. Heavy gearbox mounting brackets manufactured by the company are welded to it and the base beam.

"The principle is the same as putting dual wheels on a tractor for extra flotation and traction, except that the wheels run in-line and the track width remains the same," says Anderson. "Center pivots make deep tracks because the two wheels on each tower continually slip and dig into the mud. With four tires, the wheels just roll along without slipping and digging, which results in greatly reduced tracking. One farmer we worked with had a big, heavy center pivot with a 10-in. mainline, running on tall 11.2 by 38 tires. When he added our 4-WD system with 11.2 by 24 tires, the tracks at the end of the year were only 5 in. deep."

In the past year, some center pivot manufacturers have offered 3-WD factory base beams for towers, says Anderson. "Our mounts can be used for a 3-wheeled system too, and it helps reduce tracking. However, the 4-WD system is the most effective."

He says different concepts to reduce tracking have been tried over the years, from wide tires to duals to steel pads. "The problem is that they all create wide tracks that are difficult to cross without bouncing badly, even



It's like putting dual wheels on a tractor except that the wheels run in-line, says the manufacturer.



with large machinery. Tall 11.2 by 38 tires are popular today because they make a narrow track and can go quite deep without getting stuck. However, their large rolling radius creates a lot of additional strain on the drivetrain which will shorten the life of the components. Also, when they cut deep enough tracks and an inner tower stalls, the wheels on the outer towers can't get out of the tracks, which creates a tremendous strain on the spans and can collapse them."

The mounting system can be purchased with or without gearboxes and wheels. The wheel gearbox mounts alone sell for \$20 each plus S&H, and the center drive gearbox mount sells for \$50 plus S&H.

Contact: FARM SHOW Followup, E-Z Irrigation, 30400 Hwy. 34, Wray, Colo. 80758 (ph 970 332-4114).

Portable Seat Cooler

Even on the hottest summer days, this new 12-volt, self-cooling seat cushion will keep you from overheating. It simply plugs into your vehicle's lighter socket.

The "Summer Seat" fits most cars, trucks, and newer tractors. A power fan located inside a flap on front circulates air through hundreds of tiny spaces in the seat's microfiber and mesh material. A personal temperature controller is used to adjust the flow of air and has a 60-minute automatic shut-off to prevent drained batteries if it's left running.

The unit puts a breezy, breathable layer between your body and the seat. Its plush leatherette finish with padded back support lets you ride in comfort and style, says the company.

It comes with an AC adapter so you can also use it in your office or home.

Sells for \$59.99 plus S&H.

Contact: FARM SHOW Followup, WWT Group, Inc., P.O. Box 12339, Richmond, Va. 23241 (ph 804 648-1900; email: wwtgrp



A fan on front blows air up through seat's mesh material.

@aol.com; website: www.wwtgroup.com).

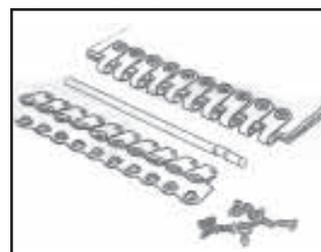
"No Rivets" Belt Fastener For Round Baler Belts

"Our new hinge fastener for round baler belts uses self-tapping screws and requires only a powered screwdriver – no other tools. It lets you repair belts inexpensively right in the field," says Jim Godfrey, Minet Lacing Technology, Inc., Princeton, W. Va.

The stainless steel hinge fastener comes in two halves that fasten together with a special notched hinge pin. The case hardened, self-tapping screws are then inserted through holes in the fastener. The screws cut their own threads into nuts along the bottom side of the fastener.

"There's no need for a tool to punch holes through the belt," says Godfrey. "The screws are self-tapping and are made to length, so only a small point sticks out the back side of the fastener. But if you're making silage bales, we still recommend grinding off the point in order to avoid tearing the plastic."

Price depends on belt width. For example,



Stainless steel hinge fastener consists of two halves that fasten to belt with self-tapping screws.

a kit for a baler equipped with six 12-in. wide belts sells for \$191.06 plus S&H.

Contact: FARM SHOW Followup, Minet Lacing Technology, Inc., 381 City View Hts., Princeton, W. Va. 24740 (ph 304 425-7161; email: mlti@citlink.net; website: http://info@mlt-usa.com).