

## Parts And Jigs “Printed” By 3D Machine

Print that part or jig you need with a 3D printer from LulzBot Products. Machines start as low as \$1,085, topping off at \$5,495 for standard 3D printing. The company not only sells the printers, filament supplies and accessories, but it also makes its own 3D printers, using its own 3D printers.

“We have more than 300 of our 3D printers running 24/7 building parts for more printers,” says Todd Atchison, LulzBot Products. “When other companies were having supply issues getting 3D printers from China, we were making ours and updating on the fly. No more bins of unneeded parts.”

Printing parts is one thing, but Atchison reports that farmers visiting the company’s trade booth at farm shows get excited about even simpler printed pieces.

“Once I explain the capability of the printers, they see lots of different uses,” he says. “Welding jigs like a cradle so a piece of conduit doesn’t roll around as they are working on it or jigs for making right angle pieces are just the start. Open the door to how it works, and the imagination and printer capabilities are the only limits to what can be done.”

The Fargo, N. Dak., based company is the largest 3D printer manufacturer in the country. Unlike most companies, it’s part of the open-source movement. Go to their website and find product information available for download that most companies keep locked away as intellectual property (IP).

“A lot of companies refuse to share the IP that would allow you to print a replacement part,” says Atchison. “You can only get your parts from a certified supplier, and you may have to wait weeks to get it.”

He explains that if you can get a 3D file, a CAD file or a 3D scan, you could make a needed part or at least a master mold for a casting.

“We’re seeing a lot of 3D printers being used for casting parts that are no longer manufactured,” says Atchison. “It’s still a pretty specialized skill set, but it’s being done.”

He notes that creating a file for 3D printing could get into questions of IP ownership and violation of trademarks or patents. That



3D printed parts can be just as durable as injection molded.

wouldn’t be the case with generic parts or older parts that are off-patent.

Types of filaments for use in a 3D printer are growing at an immense rate, suggests Atchison. “There’s a lot of demand for stronger, more industrial types of materials,” he says. “If a filament fits within our temperature range, you can try it in our printers.”

One of the primary plastics now being used is PLA from corn. However, other bioplastics are being developed, and the company offers hundreds of alternatives in filament type, color, diameter and spool weight.

“3D printed parts are capable of a long life, depending on the materials used, such as metal or carbon fiber,” says Atchison. “We have customers that have replaced a broken gear with one printed from nylon or plastic, and it holds up well. 3D printing can be just as durable as injection molding.”

For those readers interested in 3D printing, a visit to the company’s website may be time well spent. It offers free lessons in 3D printing designed for school classrooms, tutorials for individuals, and a user forum. It also offers open-source software for free modeling, scanning and controller software and much more related to open-source software.

Contact: FARM SHOW Followup, LulzBot Products, 1001 25th St. N., Fargo, N. Dak. 58102 (ph 701-809-0800; info@lulzbot.com; www.lulzbot.com).



A concrete floor, with holes sized for the 5-ft. bales, holds the hay as it’s brought from the fields. Metal grating in each floor opening supports the bales above 4-ft. deep insulated ducting.

## Hay Dryer Improves Creamery’s Cheese Products

By Bruce Derksen, Contributing Editor

Vermont’s Jasper Hill Farm, a working dairy and creamery, makes it their goal to maximize the potential of their homemade cheeses by feeding only perfectly dry forages to their cows.

To support that goal, 8 yrs. ago they installed a propane-powered hay drying and cooling system to help prevent anaerobic fermentation or ensiling of their harvested hay crops.

Most European hay dryers were built for large square bales, but the German-based model they purchased supported the 5-ft. round bales the farm used.

A 100-bale drying system was installed in a large rectangular building with two large turbines pushing heated air from the center of the structure in opposite directions. A concrete floor, with holes sized for the 5-ft. bales, holds the hay as it’s brought from the fields. Metal grating in each floor opening supports the bales above 4-ft. deep insulated ducting.

“We have the capacity to dry 100 bales at a time,” says Ellie Searles, Jasper Hill Farm’s crop manager. “We have a separate 50 bale cooler of the same design that’s not heated. Air is forced through these bales to prevent pickling of the hay while they wait for a spot

in the dryer.”

Large outdoor propane tanks feed the twin turbines. The fuel is ignited, and the air is heated in a separate chamber. Then, it’s forced into the underfloor ducting and through the bales positioned in the dryer.

On average, to bring 25 percent moisture hay down to 10 percent, the dryer needs to run for 24 to 36 hrs., although much depends on air humidity and whether hay is first, second or third cutting.

“With later cuttings, there’s less negative space between the blades of grass and the hay is packed tighter,” Searles says. “A 25 percent third cut bale would take longer to dry than a first cut bale as the bales are denser.”

She says the drying and cooling unit is critical to the farm as often the climate and humidity make drying hay in the field impossible.

“It works very well as sometimes it can be the only way to deal with our moisture issue. It helps us get the highest quality milk and cheese from dry hay.”

Contact: FARM SHOW Followup, Jasper Hill Farm, 884 Garvin Hill Rd., Greensboro, Vt., 05842 (ph 802-533-2566; info@jasperhillfarm.com; www.jasperhillfarm.com).

## Sole Saver Like A Hammer For Boots

The Sole Saver is a curved stainless-steel plate that straps onto your boot to help with shoveling or pushing anything with a metal edge into the ground. It protects the sole, acting like a “hammer” for your boot.

Designed by a long-time irrigation professional to save the soles of boots from constant digging with shovels, the Sole Saver helps dig faster while protecting footwear.

Sole saver straps onto footwear with a heavy-duty elastic webbing and a curved side release buckle for a comfortable fit.

Developed and tested over a 2-year period, the company worked to ensure a comfortable no slip grip on work and rain boots. They offer a 1-year warranty against defects.

Available on Amazon, the Sole Saver sells for \$46.99. The Sole Saver shows a 4.5 out of 5 rating from Amazon.

Contact: FARM SHOW Followup, SoleSaver, (ph 403-515-2011; www.solesaver.ca).



The Sole Saver works like a hammer for the bottom of your boot to make digging easier and extend the life of your footwear.

## Sprayer On Wheels Is Easy To Use

Whether you want to spray fertilizer or herbicide or just use it to water your plants, the Workhorse 5-gal. sprayer is a handy tool for home gardeners.

“There are other larger units, but they get heavy and cumbersome,” says Kevin Payton, who works in sales for Green Leaf, Inc. that developed the sprayer several years ago. “This is compact and serves the homeowner better.”

With a lithium battery and mounted on 8-in. wheels, the sprayer is portable to take anywhere. It pumps 1 gpm at 45 psi through a 5-ft. spray hose/wand. It sprays 30 gal. on one charge and takes 2 hours to fully charge.

“When emptied and cleaned properly after using chemicals, the sprayer is a dependable tool that lasts for years,” Payton says. Because it is so handy, he notes some customers purchase it just to water their plants.

“It’s been a very popular item,” he says, for Green Leaf, a manufacturing company for liquid handling products for the ag industry, including a line of Workhorse sprayers.

The 5-gal. U.S.-made sprayer has a one-year warranty and lists for \$200. It can be



The Workhorse 5-gal. sprayer has 8-in. wheels and a lithium battery that can spray up to 30 gal. with a single charge.

found through many national chains and online at Amazon.com.

Contact: FARM SHOW Followup, Green Leaf, Inc., 9490 N. Baldwin St., Fontanet, Ind. 47851 (ph 800-654-9809; sales@greenleaf.us).

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