

## Arched-Roof Workshop

Del Stubbs hopes he inspires others to bring the Gothic arch roof back. A couple of years ago he built one for his two-story 26 by 50-ft. workshop, and he loves the clear span, open space and strength the design provides. He and his carpenter friend, Michael Peterson, made the arched rafters out of two units of 16-ft. 1 by 8 No. 2 pine boards, lots of 1 3/4-in. staples and nearly 50 lbs. of glue.

"The arches were fairly quick to build, and the material cost wasn't bad," says Stubbs, noting he wouldn't have done it without Peterson. They rigged up a jig to cut a 16-ft. radius arc by building a cradle that pivots on a lag screw secured to a wall. The cradle sweeps the boards through a table saw. He used an old carbon steel ripping blade and added a bit of set to the teeth for kerf clearance. The cut pieces are reversed, glued, and air nailed together to make a curved board. Using various length boards to stagger the joints, Stubbs and Peterson connected and bonded three layers of boards and plywood gussets to create each rafter.

"Unlike a Quonset that is flat on top, we tapered 2 by 4's so I have a 6/12 pitch at the peak. I believe that is where the 'Gothic' name comes in," Stubbs says. He and Peterson nailed the tapered 2 by 4's together into a rib-like assembly to create the peak's pitch.

After covering the rafters (2-ft. centers) with 1/2-in. plywood sheathing, 2-in. foam insulation, tar paper and 1 by 4 blocking, they finished the roof with steel sheets installed horizontally.

"This unusual roofing, called 'Grand Beam' is made for tight radius arched roofs, and, unlike most roofing, the peak piece goes on first," Stubbs explains.

The cost of the roof would have been competitive with regular rafters, Stubbs says, if he hadn't added six dormer windows that needed to be custom made for the curvature in the roof.

Stubbs wanted the natural lighting for the second story, which is used for storage and the finish work on the Scandinavian wood carving tools and supplies he makes. After working out of a 12 by 24-ft. shed for many years, he appreciates the light and design of the new shop. He and Peterson sheetrocked the ceiling with 1/2-in. extra-strength, ceiling drywall sheets, which easily conformed to the curve. They used dense packed cellulose for the walls and roof insulation.

"The arched barn was a common building style here in northern Minnesota during the early 1900's," Stubbs says. "The free span space is a huge plus in a workshop as well."

He encourages people to consider building the arch roof style. He posted photos and



Del Stubbs loves the clear span, open space design provided by the Gothic arch roof on his two-story, 26 by 50-ft. workshop. He nailed tapered 2 by 4's together into a rib-like assembly to create the peak's pitch.



short videos of the process at <http://tinyurl.com/2cq6568>.

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## Stay Fueled Up With "Check-my-tank"

Ever been in the midst of harvest and wonder how much fuel is in the tanks? Or have you ever had a fuel leak you didn't catch right away?

There's a new British system that addresses those issues and more.

"Check-my-tank" is a fuel monitoring and management system that not only lets you check tank levels remotely and sends alerts when tanks run low, it also provides price information from area fuel companies.

Since its introduction in late 2012, and a short interview on BBC radio, interest has spread all over Britain and around the world. So, inventor Alan Smith is investigating ways to expand the service.

Check-my-tank includes an ultrasonic tank monitoring device and a modem to connect to smart phones, computers and other electronic devices. The cost of equipment, setup and mobile monitoring is about \$400 the first year and \$100 each year after that (for one tank). For an extra fee, one system can monitor up to six tanks within 600 ft. of the modem. Works on gas,

diesel, fuel oil, and propane.

Because customers can compare prices and don't need to pay for a "top-off" service that keeps tanks filled (for a fee), Check-my-tank pays for itself in a year for most small usage customers and in six weeks for high users.

Bonus savings comes from consumers changing their habits and using less fuel, because they can see how much they're using.

"We've got three big schools, a number of farmers and rural hotel chains and nursing homes," Smith says. Last fall, farmers used Check-my-tank to get hourly readings of fuel used for their drying bins.

"They can see if someone steals fuel from their tank and get alerts," he notes. Plus the mobile monitoring saves labor costs of workers physically checking fuel tanks. British chemical companies contacted Smith about installing Check-my-tank in farmers' on-farm tanks to provide their customers an additional service.

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## He Turns Propane Tanks Into Benches, Chairs

We've seen propane tanks turned into all kinds of things, like BBQ grills, fire rings, and even feed bunks. But we've never seen anything like the chairs and benches created by Colin Selig, a California artist/machinist/metal fabricator.

It started when Selig's wife gave him the "Do something with it or get rid of it" ultimatum about the old propane tank taking up space in the yard.

"I wondered if the curves would be gentle enough to be comfortable and how I could cut it up so it would be stable on its feet and require no reforming of the metal," Selig recalls.

After following standard safety procedures to make sure the tank was fully purged, he used a plasma cutter to cut out his first bench. When he welded the parts in place, it was

immediately obvious he was on to something.

He had friends of all sizes sit on the bench to test it for comfort. The standard 17-in. height worked for everyone. Since that first bench, Selig has cut up a number of 250 and 500-gal. tanks and created a variety of chairs, chaises, love seats and benches.

With steel as thick as 5/16 in., the benches are very heavy. The sculpted seating is sandblasted, then coated with a zinc-rich epoxy primer and topped with industrial urethane paint for a tough, long-lasting finish.

Selig's customers are collectors, landscape architects, and interior designers who pay \$4,000 to \$9,000 for the chairs and benches.

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## Electronic Device Monitors Water Usage

Aquamonitora, a new wireless device, makes it easier for Australians to keep track of their water supply and usage. Monitoring is crucial in regions where water is scarce and stored in tanks.

"You can't manage what you can't monitor," says Andrew Stewart, managing director of Aquamonitor Pty. Ltd. in Queensland, Australia. "What we are trying to achieve is to raise the awareness of water consumption within the household and within the business."

Aquamonitor is easy to set up and use. A battery-operated tank sensor is attached to the top of a tank and reads the water level with ultrasonic sensors. It transmits the water level to a display unit, which shows usage, water levels and tank inflow and can be set with visual and sound alerts for water level, excessive usage or theft. A second type of sensor can be fitted to a water meter to monitor mains water consumption. The display provides data from up to three tank sensors and a mains (water meter) sensor.

It's an affordable system (about \$150 for the display and \$150 per sensor) that doesn't

require an annual data fee.

"Typical users are farms and business owners, hotels and resorts, turf farms and sustainability auditors. Of particular interest is usage with monitoring header tanks that gravity feed homes. Remote monitoring is a real convenience," Stewart says.

With a stopwatch feature, specific usages can be tested such as how much water is being used by appliances, for watering vegetable gardens and for taking showers.

"Aquamonitor is a very effective educational tool," Stewart says. "My teenage son almost halved his shower water usage since we installed it."

"This is a brand new product, and at present the monitor is available only in Australia and New Zealand," Stewart says. "We would be very interested in working with distributors in North America to make the product available there, too."

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Colin Selig has created a variety of unusual chairs and benches out of old propane tanks.

