Forest of Bere Woodturners Association

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Contents

A Simple and Practical Drying Kiln for Woodturning Blanks

Early this year, I initiated a guild project to rescue parts of a 90-year-old red elm to be used to make memory pieces for a cottage community nearby. I needed to be able to get dry roughed out pieces into the hands of guild members quickly, so I restarted a kiln project begun some eight years ago and never completed. The kiln is simple box construction of 1/2" (13 mm) plywood with vertical pieces of 2"x2" spruce inside the front corners for structural support and to fasten the hinges. All inside surfaces and the door are lined with one inch extruded Styrofoam. Recycled refrigerator shelves with adjustable slotted mounting supports are on the left wall. Some shelves were modified in length using a cut-off wheel on my angle grinder. Alternatively, shelves could me made from simple wood frames with wire screen and mounted on cleats or adjustable supports. A 100-watt lamp on the floor with a dimmer switch mounted on the exterior top of the cabinet and a recycled 3" (75 mm) 12 Volt computer fan suspended on the lowest shelf to blow upwards, provide heat and circulation.

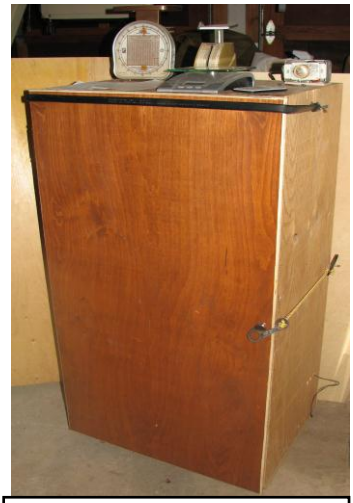


Photo 1 above

Three 1/2" (13 mm) holes are on right wall at bottom and three on the top left for ventilation.

When loading items, I try to keep a clear shelf space immediately above the small fan. Exterior dimensions are 17" (400 mm.) deep x 24" (610 mm) wide by 45" (1040 mm) high. I believe this was the result of some plywood scraps I had laying around when I assembled it 8 years ago. Recently, I added some weather stripping made of narrow strips of foam carpet under pad, to better seal the door. Two bungee cords are used to secure the door. A couple of pieces of 2x4 fastened to the bottom allow moving it around. Dimensions are not critical. An abandoned household refrigerator or vertical freezer will accomplish the same thing.

A typical drying run starts with a full load of one species, although I have inserted a few sugar maple bowls with a load of red elm and had good success. Initially the goal is to create a high humidity environment at near ambient temperature and gradually raise the temperature as the blanks dry. In winter conditions this was a starting temperature of about 17° Celsius, which I nudged up to 20° C by turning on the lamp at a low dimmer setting. I use a natural gas infrared tube heater to maintain my garage workshop at 13° C overnight and about 20° C when I am working in it. This allows the free water to leave without stressing the blanks.

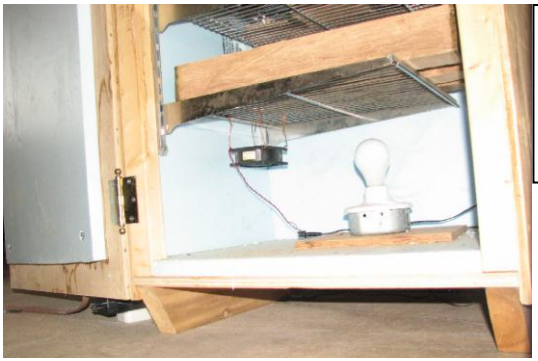
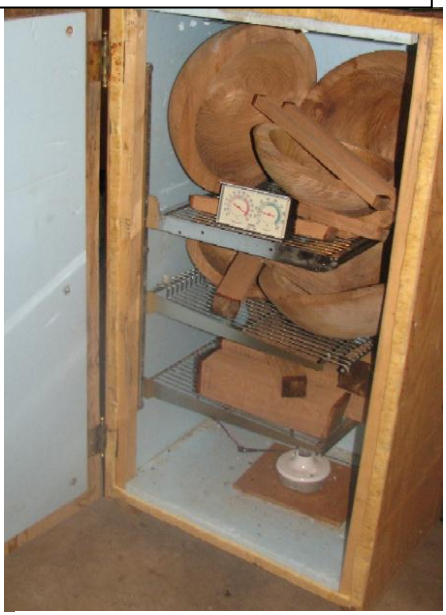


Photo 3 left Here is a photo of the lamp mount and computer fan, which is powered from a 12 volt DC supply.



I start raising the temperature after about four to five days, reference marks on the dimmer switch help to reproduce settings. I monitor the temperature with a Taylor Temperature/Humidistat and an old laboratory probe thermometer in one of the ventilation holes. I chart the date, temperature and humidity. I monitor the weight loss of several pieces and record the weights on the piece itself. Every few days, I give the dimmer a small incremental increase. As moisture leaves the wood and the cabinet, the heat energy, which was being used to vaporize the water, gradually increases the temperature of the interior quite significantly. At the end of the drying run, in winter conditions when the garage was colder, the final temperature was about 40° C and relative humidity about 20%. Currently in summer conditions, it is more than 45° C and about 25% RH. Red elm bowl blanks and spindle blanks up to about 2 ¾" x 15" have dried successfully to stable weight in two to three weeks. An 11" natural edge sugar maple bowl with walls just under 1 ", was ready to second turn in 12 days.

Photo 3 above The current load, made up of three large 14"-16" blanks, the core-outs and some spindle material. It has been in for three weeks and is pretty much near the end of its run. I have coated the endgrain on the larger bowls with wax emulsion on both inside and outside and have had almost zero problems with cracking. I have completed four loads to date and am immensely pleased with the overall results for the time and material investment.

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