

## Making a Small Kiln

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We had a small beverage refrigerator that gave up the ghost. We started to toss it out, but remembered reading about wood drying kilns that were built around refrigerators. So we decided to repurpose instead of dispose. See accompanying article by Cindy Drozda which was our inspiration.

The beverage refrigerator is 24" wide, 21" deep and 30" tall, has a glass door, insulated walls, and several wire frame racks. It had a compressor and a controller that we removed and discarded. We drilled twelve ¼" holes in the sides of the unit to provide air circulation, three near the bottom, three near the top on each side.

We purchased a ceramic light fixture like you would use in a closet, and we bolted this to the back of the unit near the bottom. An old license plate serves as a shield for the light bulb. During the winter months we use a single 75w incandescent bulb, and during the summer a 60w bulb seems to be sufficient. Initial tests showed that we could achieve temperatures of 125 degrees with a 60w bulb in the summer. We were concerned the possibility of a fire, so we purchased a simple temperature controller from Amazon for \$35 which works well. The supplied thermocouple is inserted into the unit from the rear, and is located centrally, and the light bulb is connected to the temperature controller.



bayite Temperature Controller BTC201 Pre-Wired Digital Outlet Thermostat, 2 Stage Heating and Cooling Mode, 110V - 240V 10A, \$35

I read about temperature ranges for drying wood, and it seems temperatures in the range of 100 to 120 degrees is common. This is easily done with the bayite controller. To monitor the temperature and humidity we purchased three inexpensive gages from Amazon. These are placed on the kiln shelves near the top, middle and bottom.



ThermoPro TP50 Digital Hygrometer Indoor Thermometer Humidity Monitor with Temperature Humidity Gauge, \$11

We decided to force air circulation within the kiln by installing a computer fan. We found a high speed one at Amazon that runs on 110v which can be controlled by the bayite controller.



AC Infinity AXIAL 1238, Muffin Fan, 115V 120V AC 120mm x 38mm High Speed, for DIY Cooling Ventilation Exhaust Projects, \$14

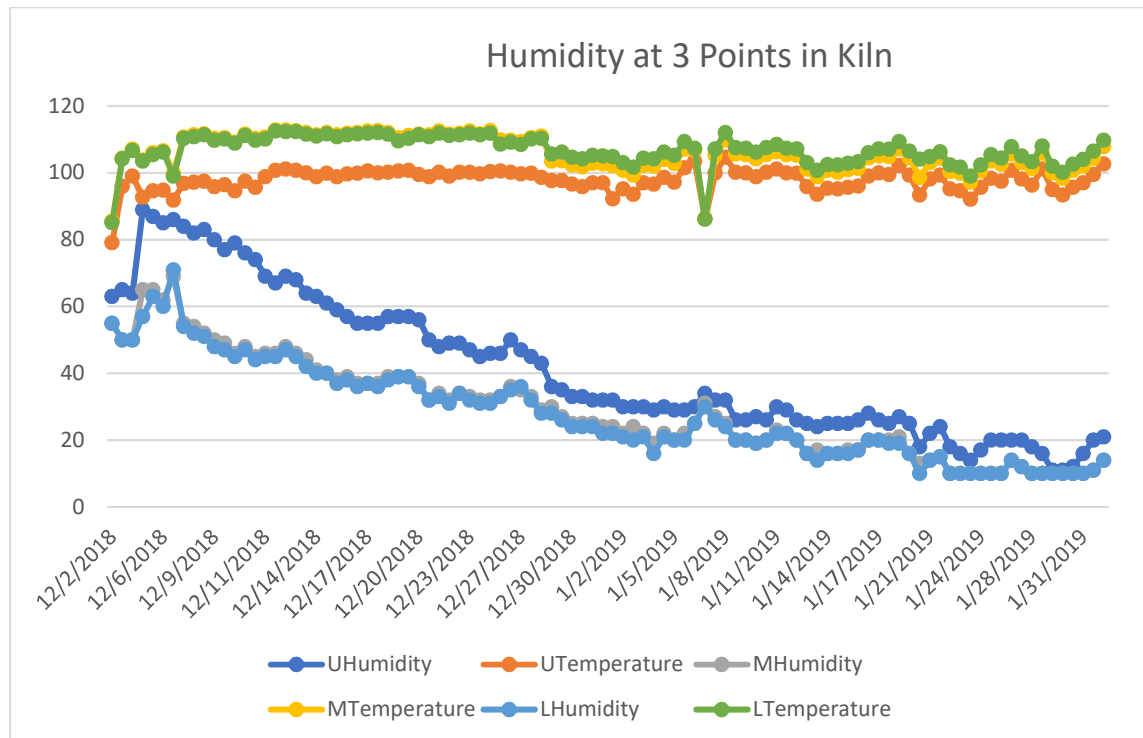
The fully assembled and operating kiln is shown below. We've had as many as 30 pieces of wood in the kiln at a time.



When we are ready to dry wood, we follow these steps:

- Cut the wood into bowl blanks
- Coat the newly exposed wood and all end grain with Ancorseal
- Number each blank and record the initial weight
- Periodically reweigh blanks and compute the weight loss. We normally do this after 30 days in the kiln
- The blanks are dry when they are no longer losing weight. Typically, we lose patience and remove the blanks from the kiln after 60 days.

We track the temperature and humidity in the kiln by reading the little gages twice a day.



The top three plots show that the temperature in the kiln is being pretty well controlled. The bottom three plots show that the humidity declines rapidly for the first 30 days, and more slowly for the next 30 days. Some of the daily variations in humidity are a result of changes in the weather.

Another way to tell when the blanks are as dry as they can get is when the humidity begins to stabilize.