Low Budget Drying Chamber

The proper environment for drying is around 55 degrees F and 75% humidity. However as winter settles, in with indoor humidity in the 20-30% range, I needed a way to keep the humidity up without trying to overly humidify the whole house (or basement).

I am starting out on a budget with other priorities than adding another small fridge (See Lou's excellent article an setting up a drying chamber) and a place for it. In the winter, my basement workshop is nearly ideal, temperature wise 55-58F. I can accelerate the season by 6 weeks or so starting drying in the garage in the fall.

My drying chamber is a large Rubbermaid storage bin with ½" dowels run through the ends. Before using it, I washed it out and then rinsed with Star San (on hand from my home brewing). If the bin is sealed, then the humidity is too high.

So I took a 40mm diameter 12v fan (commonly used on 3D printers), HEPA filter for a respirator, 12 V DC wall wart power supply and the Inkbird humidity controller as the starting point.

Above are the 3d printed pieces hold the dc power connector for the fan and the filter. I gave up trying to make the "ears" to hold the filter on the snoot and settled for simply using hot melt glue to hold the filter on.

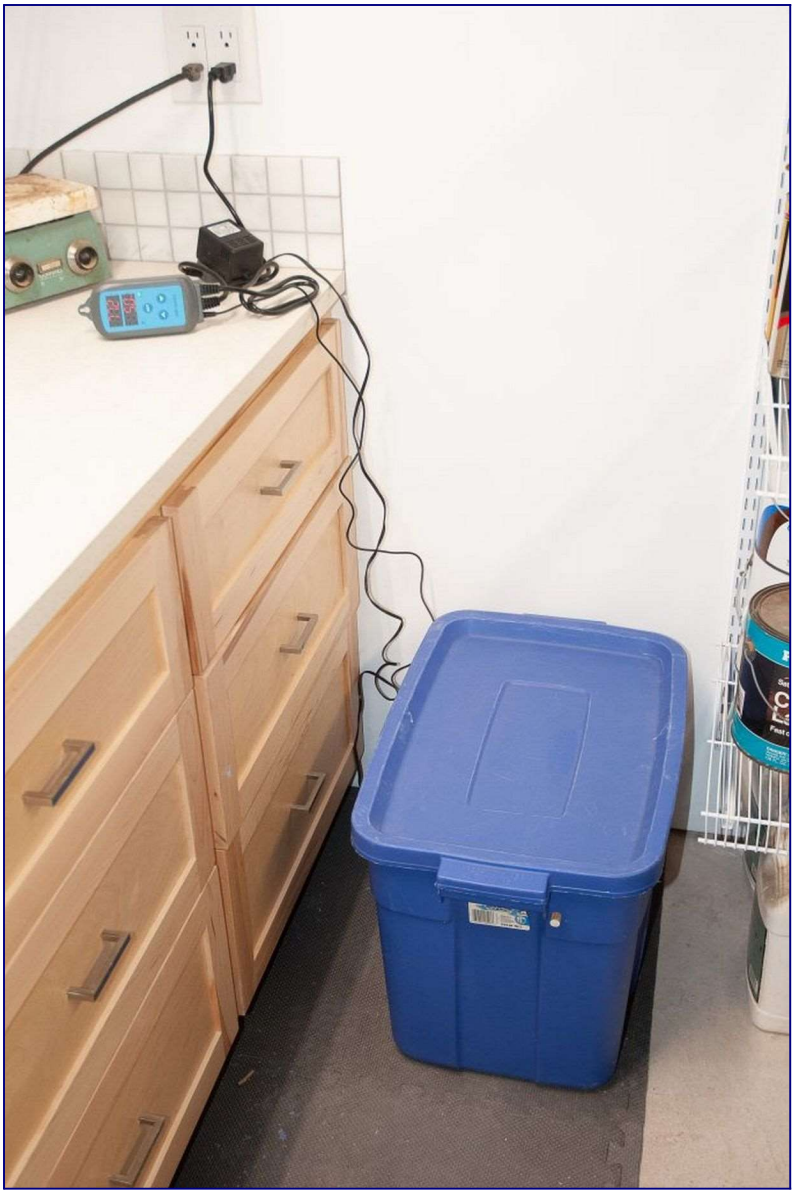
You can find the STL files for the parts on Thingiverse: https://www.thingiverse.com/thing:3329979

This is now my third season of use (winter of 2020/2021). The humidity level holds nicely when doing 8-10 lb batches of meat/ sausage. It can handle about 20-25lbs of meat, but with this small fan, it needs to be done in batches about 2 weeks or more apart or the humidity will rise into the mid 80% range and the tiny fan just cant pull in enough dry air.

In retrospect I should have placed the dowels a bit higher on the sides, maybe 1.5” from the top. There are also a couple of ½” holes on each end which are the “exhaust” openings.

Below you can see the drying chamber fully loaded with Lonzino, Sopressatta, and Pepperoni

Below you can see the drying chamber in my basement shop / brew cave.



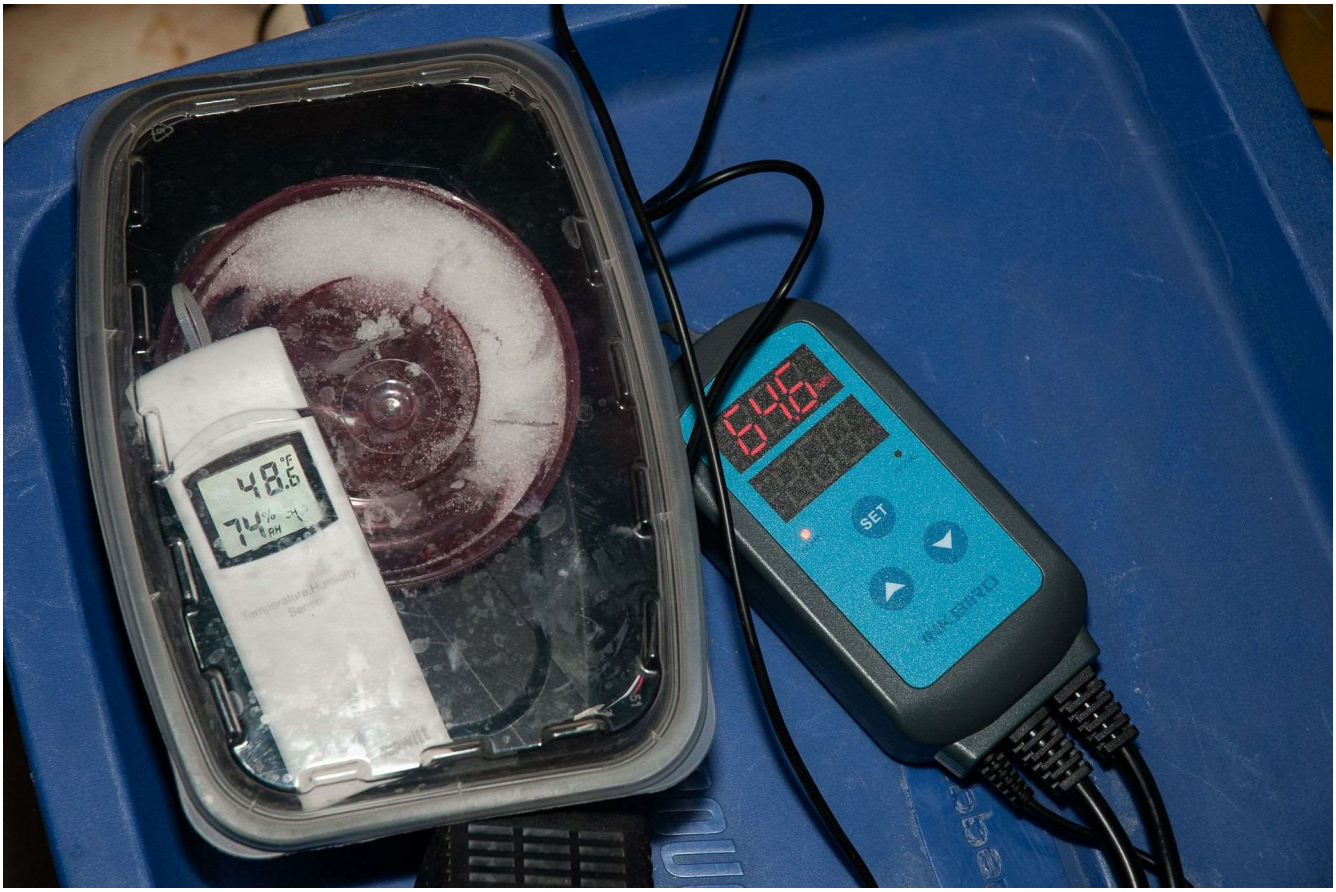
Note that this not suitable for fermenting sausages while drying other products. For that, I simply use my kitchen oven. Place the sausages on the rack, some warm water in a jelly roll pan on the bottom of the oven. To raise the temp, turn on the oven light for a while (mine will raise it from 68F ambient to 90F if left on continuously). Do put a note on the oven that sausage is inside, so someone does not inadvertently "preheat" your sausages (as happened to a batch of hazelnuts a few years ago).

Calibration of Humidity Sensors

The second year I was using the drying chamber, I had a failed batch of Lonzino that took an inordinately long time to dry. Electronic humidity sensors can easily lose calibration over time. So before starting the next batch, I bought an Ecowitt temperature and humidity monitor. The Ecowitt and the Inkbird humidity values were different by 9 points! I had a hunch the Inkbird was off but

needed to prove it.

With a bit of research, I found a cheap and easy way to check calibration. If you have ordinary salt (NaCl) that is saturated with water in a small closed container, the humidity will be 75% after a few hours as things reach equlibrium. This is perfect!. I don't really care about the accuracy over the entire range of 0-100% but want it right when around 75%. It turned out the new Ecowitt was within 1 percentage point and the Inkbird was reading low by 10 points. So now I just set the Inkbird for 85% and it maintains the correct humidity level. I will probably re-check both devices, a couple of times per year.



As you can see above, I set up the saturated salt in a small plastic box along with both the Ecowitt and the probe for the Inkbird and it was readily apparent the Inkbird was reading way low.

References:

For an authoritative reference see: https://hal.archives-ouvertes.fr/hal-01434816/document This is a nice scientific reference and provides other options for other humidity levels.

Link to my original blog post on the drying chamber and other articles on wide a variety of topics: http://bronkalla.com/blog/2019/01/02/making-lonzino-dried-cured-pork-loin/