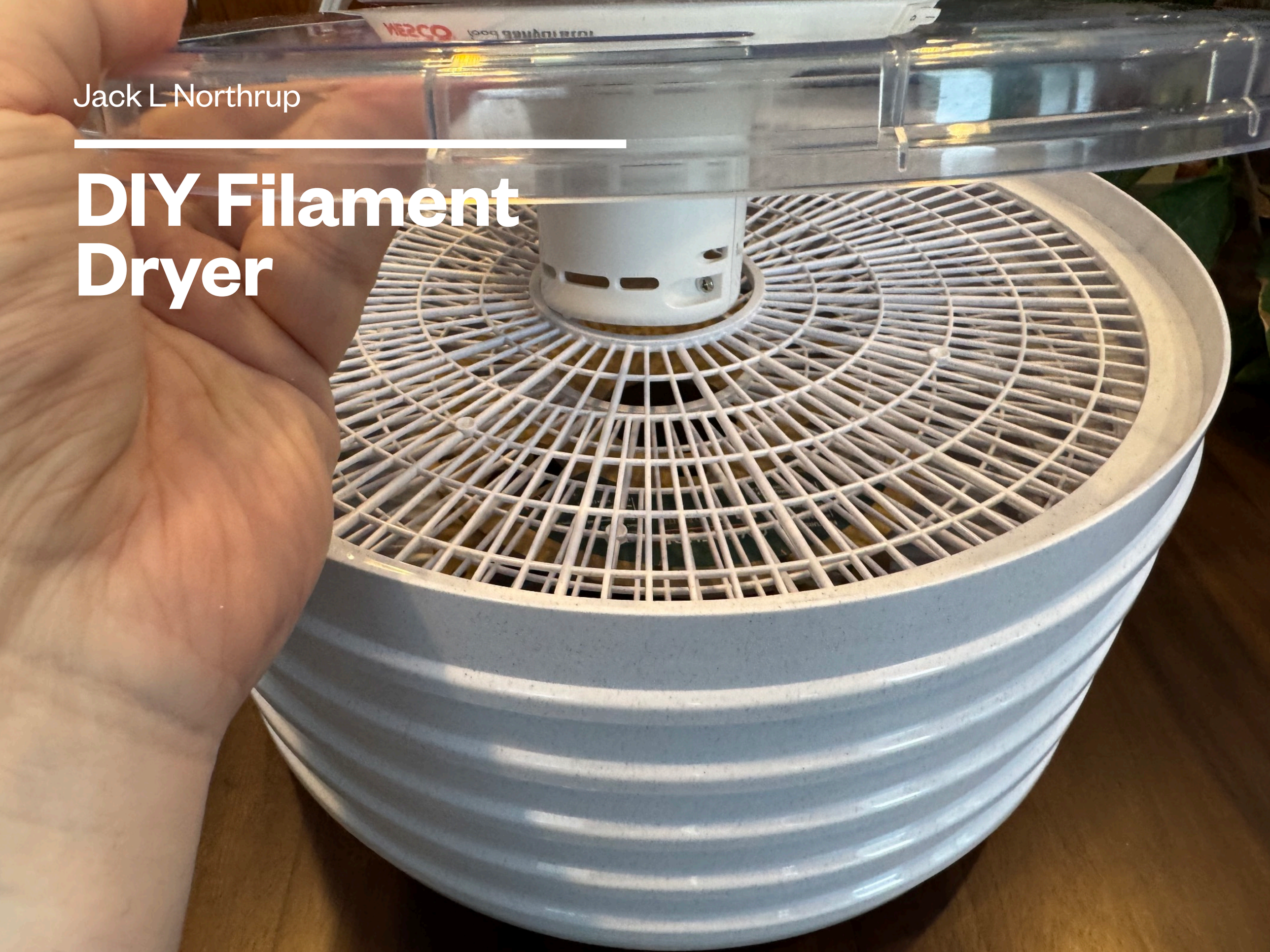
Jack L Northrup

DIY Filament Dryer



Materials

Electric food dehydrator (at least 5 trays)

Tools

Fine tip metal snippers

Objective

PLA filament used in 3D printers is susceptible to moisture once their packages are opened.

Filament that has taken on moisture is not as flexible and is likely to break while going through the machine. Storing the filament in airtight containers with desiccant can help but it is not perfect. Some printers with enclosures have a 24 hour dying cycle that can be used to dry opened filament before use by using the heat from the heated bed to promote evaporation from the PLA. This technique requires you to stop printing and be static for 24 hours.

We are going to be using the heat and air movement of a food dehydrator to remove the moisture. Most inexpensive dehydrators run with air temperatures between 60 and 75 degrees Celsius. Well below the filament's melting temperature around 175 degrees Celsius.

Choosing a Dehydrator

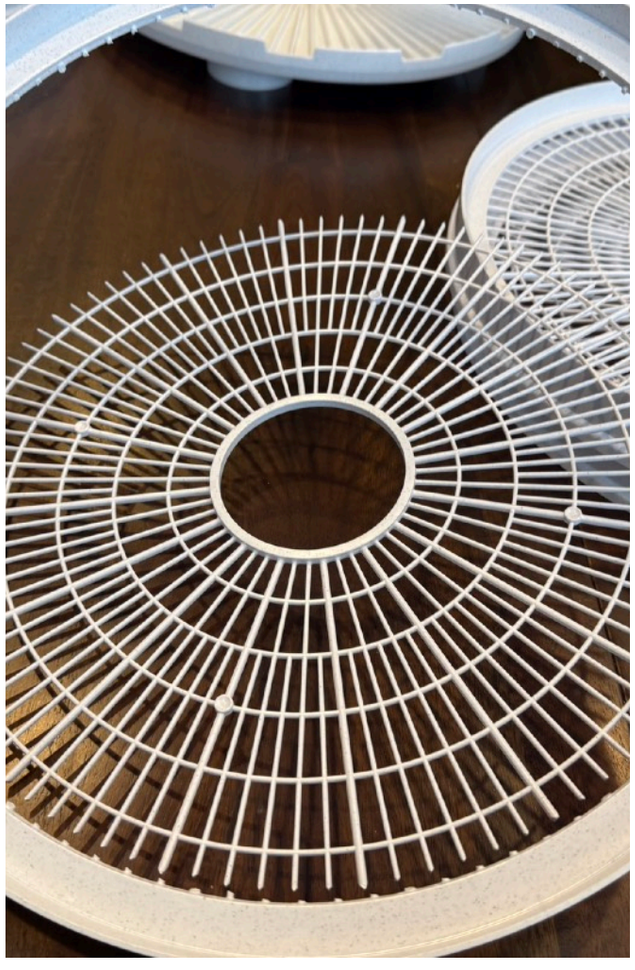
Dehydrators come in many shapes and styles.

Most dehydrators use a combination of a heating element and a fan to move the air. Very inexpensive dehydrators only have the heating elements and exclusively uses convection to move the air around.

The next price point up uses a fixed temperature and a fan. These devices will mount the heater and fan at the top or the bottom of the device. The device used in this guide is a fixed temperature unit with a top mounted fan.

The fan forces the heated air down and out vents in the base. This model is equipped with 5 trays that will be used to for drying the spools or loose filament.

Preparing the Trays



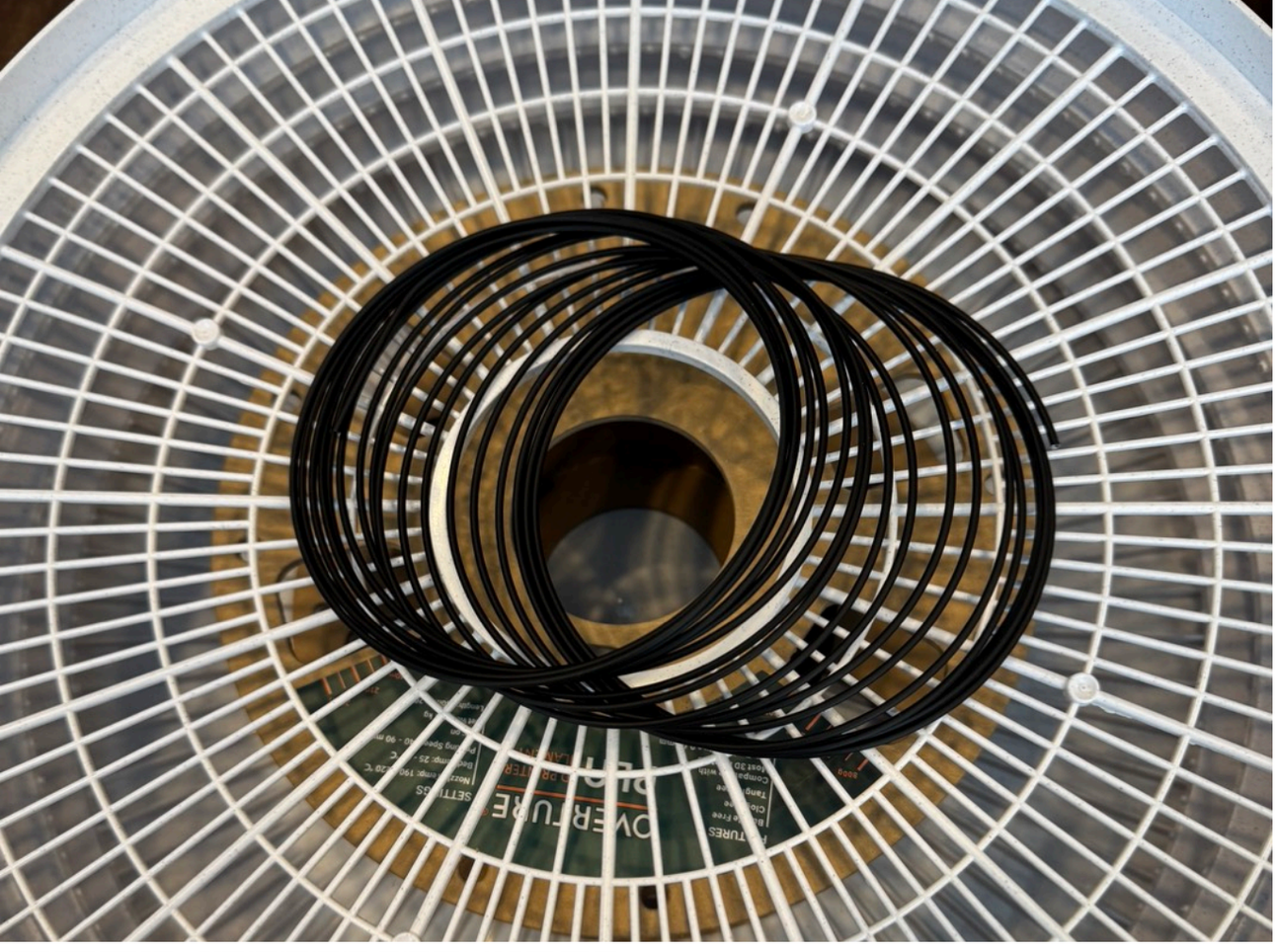
Select 3 of the trays to modify to fit the a 1 kg spool of filament

Using the fine tip metal snips clip the ribs of the tray where they attach to the rim. After the middle sections are removed from the 3 trays you can put away the tools.

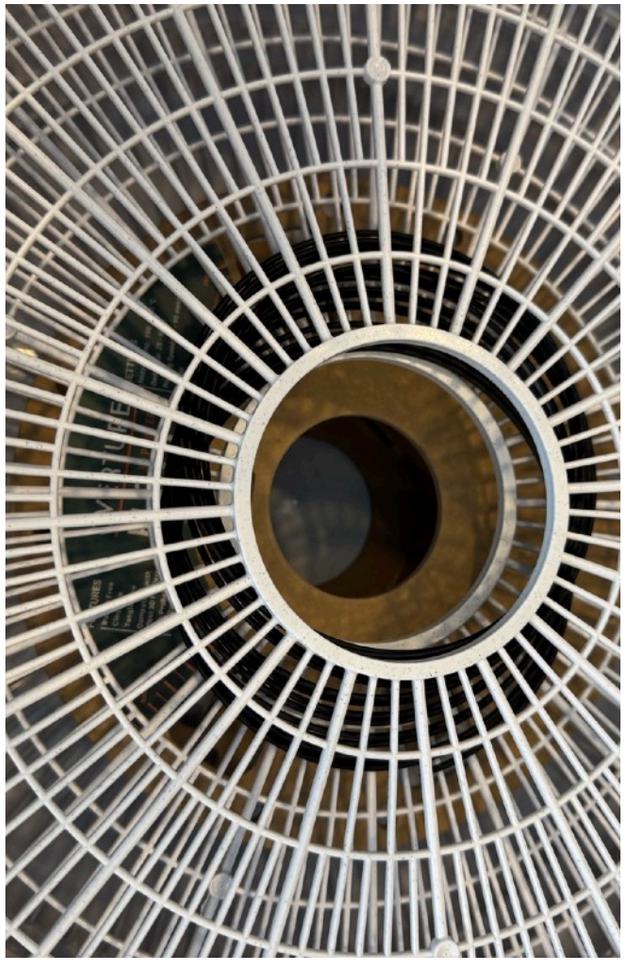
Assembling Your Dryer

Organizing the layers

The three rings when stacked together are the same height as a standard one kilogram spool of filament. The larger two kilogram spool is wound differently and do not allow for air to penetrate the interior wraps of filament. Using the base of the dehydrator as a foundation for the three rings. The two unmodified trays are placed on top of the rings like a lid.



Assembling Your Dryer Part 2



Final assembly of Dryer

On the unmodified trays you can place remnants of filament that needs to be respooled after drying. The lid and the heater can be placed on top. This unit just has an on-off switch.

Once loaded the average drying cycle is **4-6 hours**