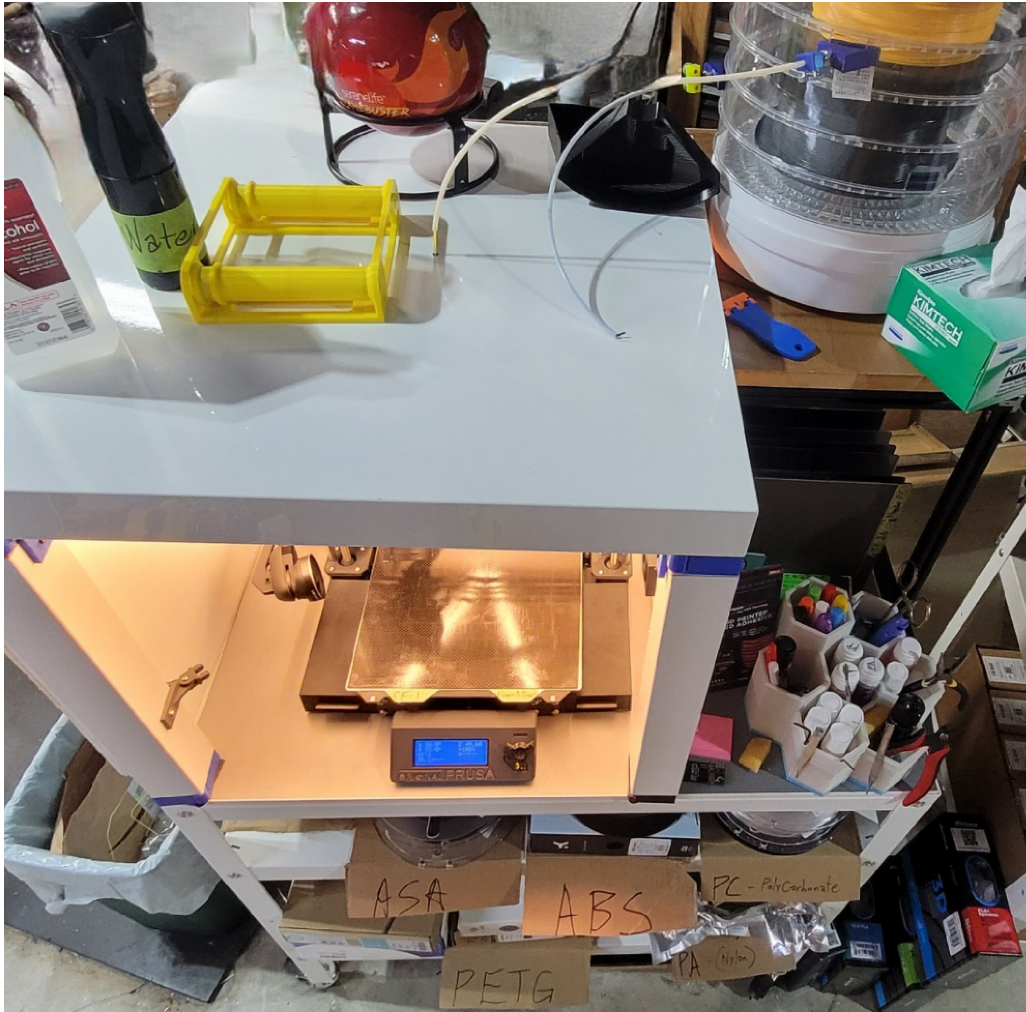# Filament Printer Rolling Cart

Mobile and Self-Contained

Unplug and roll it into the corner; enabling better space management around the shop without disturbing the 3D printer at work.

- # Automatic Fire Extinguisher Ball - 13-foot diameter

  - https://www.youtube.com/results?search_query=fire+extinguisher+ball
  - https://www.amazon.com/Flamebuster-Lightweight-Extinguisher-Automatically-Transportation/dp/B09YYWD94D
  - It would be an awful mess if it went off…but if I'm cleaning up dust from this thing, it hopefully means I still have a *house* to clean it out of

- # Ikea BROR Utility Cart

  - https://www.ikea.com/us/en/p/bror-utility-cart-black-pine-plywood-60333850/
  - The working surface of this cart is almost an inch narrower than the LACK table, so my table legs hang over the edge in the front
  - I like the bolted together construction and the medium duty tabletop is more than strong enough for 3D printers

- # Ikea LACK Side Table

  - https://www.ikea.com/us/en/p/lack-side-table-white-30449908/
  - https://www.printables.com/model/248372-enclosure-ikea-lack-table-foldable-door
  - https://www.walmart.com/ip/Pen-Gear-Ultra-Strong-White-Tri-Fold-Foam-Board-28-x40-1-Pk/125704738
  - https://www.amazon.com/PAUTIX-2400LEDs-Lead-Free-Material-Flexible/dp/B0B9SG5S3W
  - I picked white with the idea of bouncing more light around the inside of the box, although I am not certain this actually helps the camera...maybe black spray-paint would help?
  - As originally built I used acrylic sheet as the design suggested, but I wanted to SEAL the enclosure...Foam Core seals and insulates!
  - The cheap foam core cardboard is super easy to cut and glues together nicely with GEL superglue and accelerator spray

- 1000 VA Uninterruptible Power Supply (UPS)

  - https://www.microcenter.com/product/610649/apc-back-ups-pro-bx-1000va,-8-outlets,-avr,-lcd-interface
  - Any 1kVA UPS should work for continued printing through times of power fluctuation or loss
  - I choose to upcycle an older UPS by drilling a hole in the side to plug in an outboard battery
  - The cord of most UPS' are around 10' long, but in order to make the cart more mobile, it needed a 25' Extension Cord to stay plugged in for demanding materials that require printing from an active dehydrator
  - Battery Backed-Up
    - Printer
    - Raspberry Pi
  - Surge Only
    - Dehydrator
    - Power Strip

- 35 Amp Hour Absorbed Glass Mat (AGM) Battery (and connections)

  - https://www.homedepot.com/p/MIGHTY-MAX-BATTERY-12-Volt-35-Ah-Rechargeable-GEL-Sealed-Lead-Acid-SLA-Battery-ML35-12GEL/308970494

  - https://www.amazon.com/Tanstic-Ratcheting-Connectors-Compatible-Powerpole/dp/B0969L6SRJ

  - https://www.amazon.com/BNTECHGO-Silicone-Flexible-Strands-Stranded/dp/B017TGYW3S

  - https://www.amazon.com/Elec-Connector-Waterproof-Automotive-Electrical/dp/B075MBM64M

  - This expands the cart's capabilities by allowing me to unplug the cart (UPS with Extension Cord), and although not powering the dehydrator or an active enclosure heater, the printer and its Pi continue to chug along while being rolled aside for a couple hours

- APC Surge suppressor power strip

    - https://www.amazon.com/APC-Protector-SurgeArrest-Essential-PE63/dp/B01M3SYFL4
    - I know it's overkill to have a nice surge suppressor behind a UPS but I needed the plugs, and even UPS devices fail sometimes
    - Powered by the Surge side of the UPS so it dies when the cart is unplugged

- Generic Food Dehydrator

    - https://www.thingiverse.com/thing:4639040
    - https://www.printables.com/model/73335-dehydrator-dual-spool-holder
    - This dehydrator:

- Is cheap
- Fits 2+ rolls of filament
- Gets hot enough @350W to dry the polycarbonates and nylons thoroughly (or melt some spools)
- I cut the bottoms out of all but one of the trays, notched 2 trays for Tube adapters, installed Bowden tube fittings on adapters, added spool holder, and added a PTFE tube for each roll
- The PTFE tubes are just guides to keep the filament covered until it reaches the enclosure, once again probably overkill
- Powered by Surge side of UPS so it dies when the cart is unplugged, and is on it's own Smart Plug to enable remote management (or when I forget to turn it off)

- ## TP-Link Kasa Smart Plugs
  - https://www.amazon.com/dp/B07RCNB2L3
  - These things are cheap as chips, and when connected to my guest wifi network, are able to give me remote power switching for EVERYTHING! ...I seriously have like 15 of these
  - https://www.amazon.com/Kasa-Energy-Monitoring-Smart-Plug/dp/B08LN3C7WK
  - I move my single metered plug around to test, but the regular cheap plugs go on everything!

- Raspberry Pi 4

  - Running OctoPrint https://octoprint.org/
  - Powered by the Battery side of the UPS to keep it powered all the time, and on it's own Smart Plug so I can remotely hard reset if/when necessary

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Extras

- Mister or spray bottle with Water

  - https://www.amazon.com/Continuous-Bottle-Atomizer-Styling-Cleaning/dp/B093KXK6RN/
- "Flush Cut" style electronics side cutters
  - The cheap ones that come with most 3D printers are fine for this kind of thing
- Needle Nose Pliers for support material etc.

  - Without Teeth – https://www.amazon.com/Hakko-PN-2008-Long-Nose-Pliers-Outside/dp/B00FZPHIZ0/
  - With Teeth – Use the cheap ones that come with most 3D printers

    https://www.amazon.com/hwangli-Multifunction-Needle-Precision-Stripper/dp/B07MHBW2QZ
- Long tweezers to pull filament "Ooze" off the hot nozzle

  - https://www.amazon.com/Stainless-Tweezers-Dressing-Forceps-Serrated/dp/B00EKQ7FZI
- Several scalpels
  - I like to always have a sharp blade in the shape most useful for the application, and scalpel blades are cheap
  - Smaller Handles (#3 handle)
    - #11 Flat edge triangular blade
    - #12 Hawkbill\hook blade

- - - #15 Small rounded edge blade
  - Larger Handles (#4 handle)
    - #22 Large rounded tip and flat side edge blade
    - #23 Large all rounded edge blade
  - There are printable scalpel handles, but I prefer the metal ones on Ebay for a buck or so each
    - Handle Size 3 - https://www.thingiverse.com/thing:1488946
    - Handle Size 4 - https://www.thingiverse.com/thing:1479421
    - **Blade Covers -** https://www.thingiverse.com/thing:3101180
    - **Blade Disposal Bank -** https://www.thingiverse.com/thing:3417107
  - Printable scalpel covers made from PLA can be heated then squished, in order to fit snuggly on whatever handle is being used
- Hexagonal Desk Organizer
  - https://www.printables.com/model/277310-hexagonal-organizers
  - I liked the "Green" version scaled to ~200x200mm, it keeps adhesive bottles and tools together

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